Development of Instructional Programs for the CTC Archive

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BDM Federal, Inc.

July 1996

United States Army Research Institute for the Behavioral and Social Sciences

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13. ABSTRACT (Maximum 200 words)
   The objectives of this project is to develop criterion referenced programs of instruction for: 1) the instructor-based environment at POM and;
                      2) the remote utilization condition.

This program consists of four major tasks;
Task 1) Prepare a program development plan which will describe how the work is to be conducted, times of initiation and completion of tasks, efforts, and dates when products will be delivered. Deviations permitted with approval of the COR.
Task 2) Prepare instructional modules in accordance with the instructional design presented in the following outline (administered in an instructor-based format).
Task 3) Develop a second instructional program, intended for remote users, using the content from the instructor-based course. Self-paced instructional programs should be available in different media such as PC tutorial and paper based.
Task 4) Complete try-out and evaluation of program to be refined based on feedback.

14. SUBJECT TERMS
Mission Database, ARI-CTC Archive Workshop, Training Research Automated Catalog System (TRACS), archive, catalog, Combat Training Center (CTC), National Training Center (NTC)

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ARCHIVE & RESEARCH CENTER

U. S. Army Research Institute Training Course

Presidio of Monterey Field Unit

Monterey, CA 93944-5011

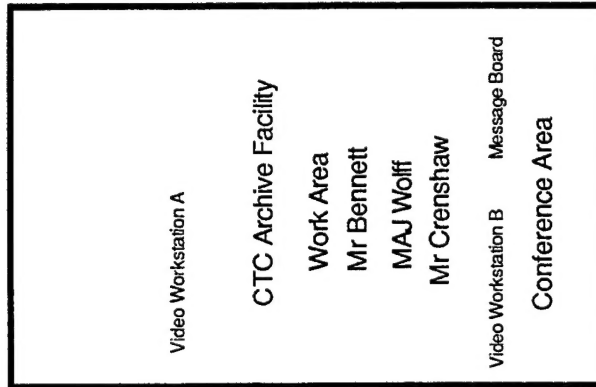(408) 647 - 5371

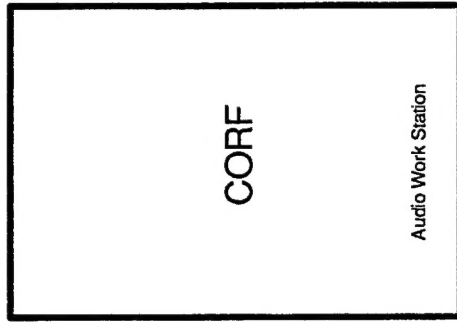CTC ARCHIVE AND RESEARCH CENTER TRAINING COURSE

AGENDA

26 April - 7 May 1993

DAY/TIME	ACTIVITY	POC
	WEEK 1	
MONDAY		

08:00	Introduction
	  Welcome
	  Administrative Information
	   Objectives/Overview
	  CALL Overview
		Ms. Ann Hamza, ARI
		
		MAJ Wolff

09:00	NTC Orientation	CPT Sliepka
TBD	JRTC Brief	TBD
TBD	CMTC Brief	TBD
TBD	Non-digital Archive Orientation (Bldg 105)	Mr Bennett, BDM
TBD	Training Modules: Data Sources	Facilitators
TUESDAY-FRIDAY		
08:00	Continuation of Training Modules	Facilitators
	WEEK 2	
MONDAY - THURSDAY		
08:00	Explore Database and Conduct Research - Produce Report	Facilitators
FRIDAY		
08:00	Round-table Report Distribution of Certificates Comments on Workshop	All Participants

CORF

Audio Work Station

Building 106

Video Workstation A

CTC Archive Facility

Work Area
Mr Bennett
MAJ Wolff
Mr Crenshaw

Video Workstation B   Message Board
Conference Area

Building 105

Large Parking Area

PHONES:

IN: AV 8785367
       (408) 647-5367
OUT: 9- off-post
       8- AV on 5219
       4- Ft Ord
       4-55-0- AT&T Credit Card

North

Office
Chief
Mrs. McClure

Men

Women

Phone & PC

Mr McCluskey

Mr Ford

Mr Root

Ms. Hamza

Library

Video Workstation C&D

Mr. Bennett   Dr Keesling
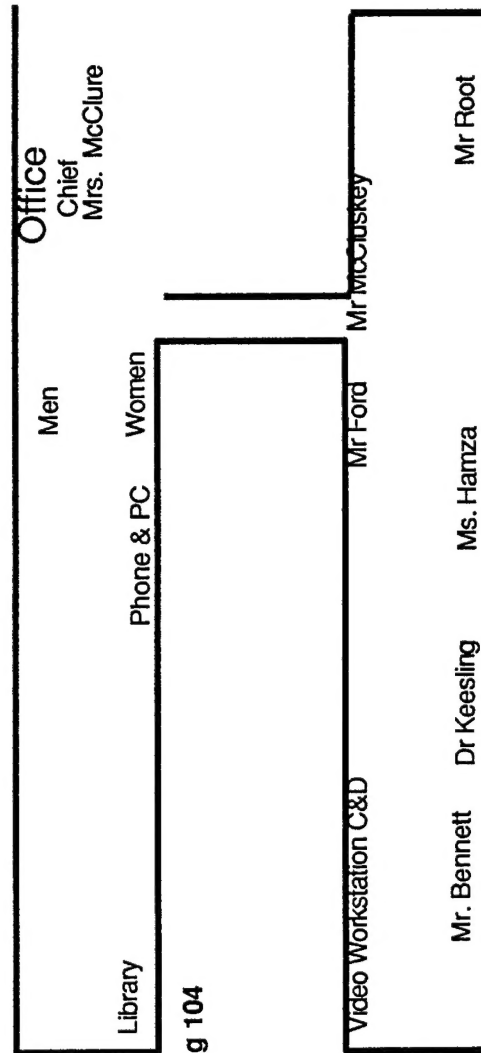
Building 104

Artillery St.
Gate

**U.S. Army Research Institute
Presidio of Monterey Field Unit**

Nov 1992
Not To Scale

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CTC Archive and Research Center Workshop

Objectives and Overview

CTC Archive Workshop Goals

☆ Provide an <u>understanding</u> of archive components

☆ Provide <u>skills</u> needed to exploit the archive

☆ Provide the <u>opportunity</u> to conduct research

Workshop Objectives

The Observer/Analyst will learn:

1. What comprises the CTC archive and how it is organized.

2. Procedures and policy for conducting research and disseminating data.

3. The capabilities of the Combat Analyst Workstation.

4. To analyze the Take Home Package component of the archive.

5. To analyze the audio and video components of the archive.

Workshop Objectives (continued)

The Observer/Analyst will be able to:

1. Identify and frame issues that can be addressed by the data in the CTC archive.

2. Identify additional types of data required from the CTCs to support critical issues.

3. Conduct preliminary analyses supporting specified issues and brief the results.

4. Formulate a plan for the future utilization of the CTC archive and research center in support of critical Army issues.

Course Organization

☆ Instructional methodology: Mastery Learning

☆ Criterion-referenced evaluation: Skills Assessment

☆ Approach:

  ✔ Minimal formal presentations

  ✔ Stand Alone Modules and Demonstrations

  ✔ Individual mentor/consultants

  ✔ Certification

A Perspective on the Research Process

Output

Army Lessons Learned

Knowledgeable Personnel

Instrumented Data

Other Information Sources

Audio Data

THP Data

Other CTCs' Data

AAR Tapes

Issues/ DOTML Topics
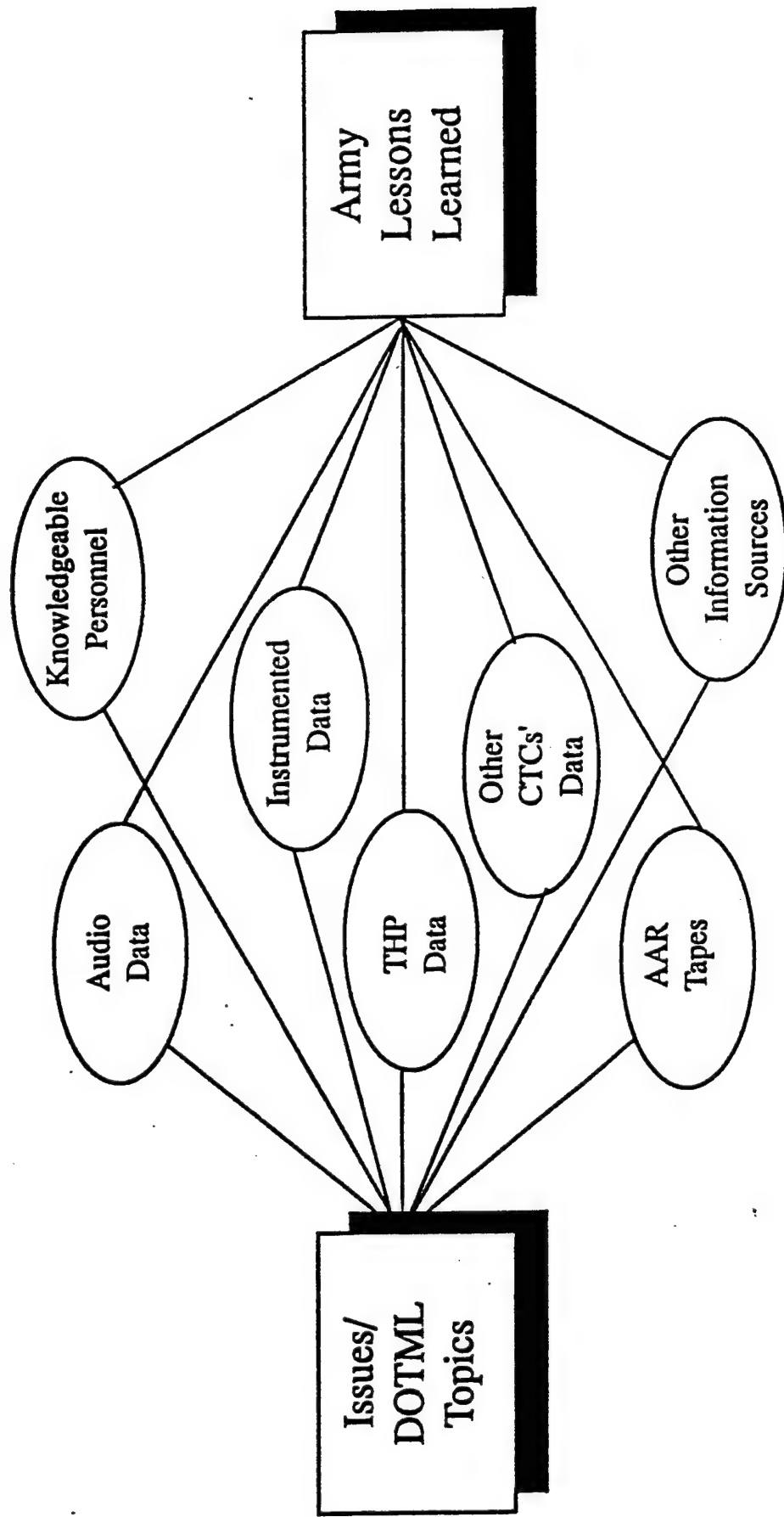
ARI Data Archive

Input

Overview of the ARI-CTC Archive data types

Digital Data

☆ NTC instrumented data on VAX

☆ JRTC T&EO data on VAX

☆ PC data bases

Non-digital Data

☆ Video data

☆ Audio communications data

☆ Overlays

☆ Paper-based data

5

CENTER FOR ARMY LESSONS LEARNED

OVERVIEW

PROCESSING/
DISSEMINATION

COLLECTION

HQ

ANALYSIS

CENTER FOR ARMY LESSONS LEARNED

REQ/AUTH/ASGND

82/46/32

CALL

WORKSHOP PURPOSE:

TO PROVIDE ANALYSTS WITH SKILLS AND FAMILIARIZATION TO ACCESS, UTILIZE, AND CONDUCT ANALYSIS ON UNIT TRAINING DATA FROM THE ARMY'S COMBAT TRAINING CENTER (CTC) ARCHIVE TO ENHANCE DTOMLS

ARCHIVE EXPLOITATION COMPLETES THE SECOND MISSION OF THE CTCs

"Provide a data source for lessons learned in order to improve doctrine, training, organization, material, and leadership."

Para 6.a.(5), AR 350-50

TRENDLINE ANALYSIS PROGRAM

THE ARMY'S PROGRAM TO COLLECT, PROCESS, ANALYZE AND DISSEMINATE DATA PRODUCED AS A RESULT OF TRAINING AT THE FOUR COMBAT TRAINING CENTERS FOR THE PURPOSE OF PROVIDING INFORMATION TO IMPROVE DOCTRINE, TRAINING, ORGANIZATION, MATERIEL AND LEADERSHIP.

TRENDLINE ANALYSIS PROGRAM RELATIONSHIPS

COLLECT
BATTLEFIELD EVENTS
TASK PERFORMANCE
OBSERVER COMMENTS

PROCESS
CHECK
CATALOG
ARCHIVE
INTEGRATE

ANALYZE
VERIFY GUT FEEL
FIND NEW INSIGHTS
SOLVE KNOWN ISSUES

DISSEMINATE
CALL BULLETINS & BRIEFS
REPORTS & STUDIES

CMTC
NTC
JRTC
BCTP
CTC ARCHIVE
CALL
OTHERS
CENTERS
SCHOOLS
LABS
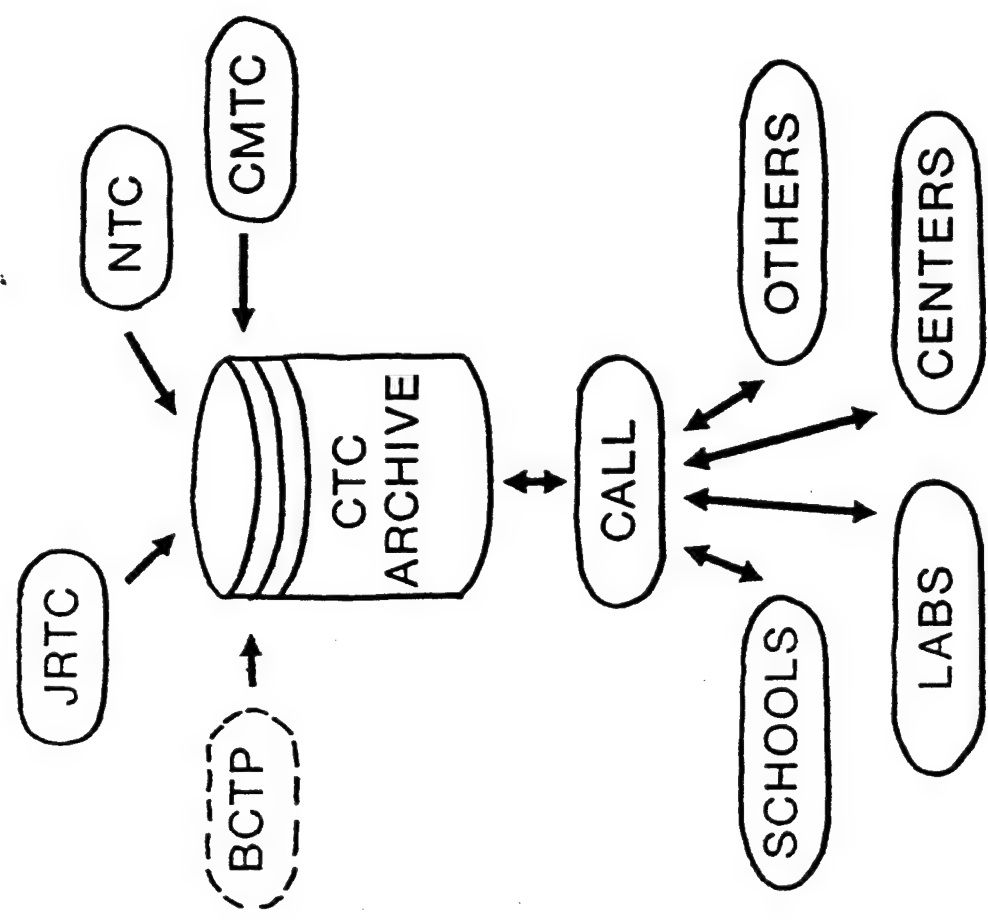
DATA COLLECTION

AMTP T&EO

BATTLEFIELD EVENT DATA

ARMY STANDARD

SCHOOL HOUSE ▪
HOME STATION ▪
CTC

FM NETS

80 CHANNELS RECORDED

FIRING ACTIVITY
WHO SHOOTS WHAT, WHEN

POSITION
10 DIGIT GRID

PLAYER STATUS

DEAD/ALIVE
TRACKED/UNTRACKED
SOURCE OF CASUALTY

O/C & SME COMMENTS

TAKE HOME PCKG

EACH MSN ASSESSED
BY BOS BY TF, CO/TM,
AND SPT UNIT

AAR

FOR EACH ECHELON
AFTER EACH MSN

OPORDS, LOGS JOURNALS

DATA PROCESSING

CTC

COLLATES DATA AND FORWARDS TO CTC ARCHIVE AT THE
ARMY RESEARCH INSTITUTE, PRESIDIO OF MONTEREY, CA

ARI-POM

CREATES RELATIONAL DATABASE FROM INSTRUMENTED DATA

RECEIVES, PROCESSES, ARCHIVES, ANALYZES
AND DISTRIBUTES DATA

RESPONSIBLE FOR ARCHIVE DEVELOPMENT

GATEKEEPING

- CALL CONTROLS ACCESS AND COORDINATES TRAINING
  - •DATA IS SENSITIVE, FOUO
  - •CLASSIFIED PRODUCTS CAN BE DERIVED
  - •QUARTERLY WORKSHOPS AT ARI-POM

- CALL REVIEWS USER PRODUCTS
  - •COORDINATES W/CTC
  - •ENSURES UNIT ID PROTECTED
  - •CHECKS USER CLASSIFICATION

DATA ANALYSIS

ARI-POM
ANALYZES TRAINING ISSUES IN COORDINATION W/CALL
MAINTAINS A COMPREHENSIVE RESEARCH FACILITY

CALL
ACTS AS "GATEKEEPER" FOR ACCESS
RESPONDS TO CUSTOMER DATA REQUESTS
RESEARCHES CTC DATA FOR LESSONS LEARNED
COORDINATES ANALYSIS WITH PROPONENT SCHOOLS & ARI
REVIEWS ANALYSIS/PRODUCTS USING CTC DATA

SCHOOLS/PROPONENTS
EXPLOIT CTC DATA AS PART OF THE CBRS PROCESS
INCORPORATE FIXES INTO DTOML

DISSEMINATE LESSONS LEARNED - FIELD

CALL DISTRIBUTES LESSONS LEARNED VIA MANY ROUTES:

CALL PUBLICATIONS
NEWSLETTERS @ 30,000 EA TO 750 ADDRESSEES
BDE THRU DA, ALL COMPONENTS & 125 GENERAL OFFICERS

BRIEFINGS

DOCTRINE REVIEW
LESSONS LEARNED INCORPORATED INTO DOCTRINE

AND LITERATURE DURING CALL REVIEW

TLA CUSTOMERS

TRADOC SCHOOLS & CENTERS
TRAC
RAND ARROYO
CAA
FORSCOM
NIGHT VISION LAB / HUGHES
TACOM / FMC
CGSC
AMSAA
OSD / LMI
USMA

PROPONENT ACTIONS

CGSC
NTC & JRTC DATA USED TO UPDATE THE TACTICAL COMMANDERS DEVELOPMENT COURSE.

INFANTRY SCHOOL
CHANGES TO POI

ARTILLERY SCHOOL
TARGET ACQUISITION STUDY

CTC TLA PROGRAM

FOR INFO CALL:

CPT KATHLEEN LADIG

CENTER FOR ARMY LESSONS LEARNED

CAC-T, FT LEAVENWORTH, KS

DSN 552-2255/4317

CTC ORIENTATION

NTC Orientation

NTC

NTC Command Brief

Narrative Format

NATIONAL TRAINING CENTER
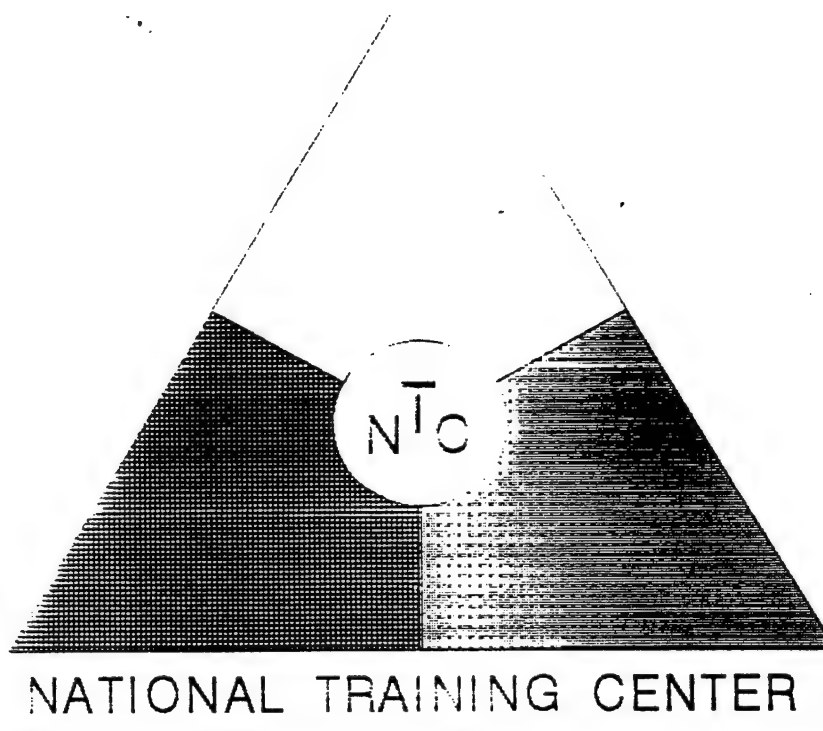
*There are no spectators on the NTC
battlefield; everyone is a player.*

NTC Command Briefing Notes
As of: 12 March 1992

Slide Sequence

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2. NTC Mission
3. NTC Wiring Diagram (coyote)
4. NTC Community
5. Key Aspects
6. California Map
7. Live Fire/MAP
8. Climate and Topography
9. Rotations
10. Air Force - Close Air Support
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22. OPFOR Augmentation
23. 2 Soldiers w/MILES
24. Smoke Markers
25. Top of Tank w/antenna
26. Minefield
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28. Instrumentation
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31. Live Fire Range
32. Live Fire Target Emitting Smoke
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35. Daily After Action Reviews
36. Live Fire AAR (COL May photo)
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42. The Future

Slide 1
[Cover Slide of M1 Tank]

INTRODUCTION

What I would like to do for about the next 45 minutes is to give
you an overview of the National Training Center and the training
environment in which U.S. Army units go there to train.

Slide 2
[Mission Statement]

- That is the mission that we have here at the NTC.
- I would like to focus on 2 parts of the mission. First is the
joint training. We work closely with the Air Force. They have a
program called Air Warrior and are full participants with us in
this training. In the last sentence, we really focus at the
battalion level here at the National Training Center. That is
the level of organization that we can provide the best quality
training. We can and do provide training and feedback at other
levels, but we must guard what we do here to make sure that we do
not lose the focus on the battalion.
- We also have a data source that provides data to a wide range
of issues in everything from equipment to training. If people
tell us the kinds of data they would like collected, we can
collect the data to provide information to people who study the
doctrine to make changes. We will maintain that helpfulness as
long as it does not interfere with training.

Slide 3
[NTC Wiring Diagram (coyote)]

- This is how we are organized.
- The Operations Group is the observer controllers. They provide
all the training to rotational units.
- There is an armor brigade stationed here that is a separate
brigade, but is smaller than a normal separate brigade. It has 2
missions: 1) to be a deployable armor brigade should we go to
war--as its secondary mission. 2) Its primary mission however is
to be an opposing force against which units train when they
deploy here to the National Training Center. His strength has
increased by 200 over what is shown on the current chart.
- The Garrison Commander is a colonel and he provides all the
life support services here on post. He has about 1000
individuals on post who provide functions ranging from finance
and accounting (the pay function) to people who run utilities,
heat, light, water, and so on. We have the capability of
providing both DS and GS level maintenance. Additionally, the
garrison has aviation resources that provides support to the
armor brigade, the protocol office, the Forscom Leaders Training
Program (FLTP), and also provides attack aircraft and air assault
aircraft for OPFOR rotational training missions. The garrison's

people also provide maintenance to the preposition fleet and the
Operations Group fleet of vehicles. DynCorp, the contractor on
post, provides organizational support to the various vehicle
fleets.
- Then I have a small medical and dental organization with a 28
bed hospital.

Slide 4
[NTC Community]

The only community itself is about 14,000 folks. We are counting
everyone, who works on Fort Irwin. What we have physically on
Fort Irwin is about 4200 soldiers and 2000 civilians, many of who
drive every day the many miles from the surrounding towns to
work. What we have physically on the post is about 1700
families who live and reside here and also another 673 military
families who live in Barstow and commute to work daily. We also
have a kindergarten through the 8th grade on post. Our high s
chool age children make a 40 mile, one way, daily commute to the
Silver Valley High School in Yermo. I have a PX for sundries and
a commissary to sell groceries, as well as a full range of other
facilities like a recreation center, gym, movie, pools.
Altogether, there is a full range of activities for the people
who live on post. For those members of the Fort Irwin community
that live in Barstow we have a fully staffed Outreach Center,
USO, and a Welcome Center providing liaison and help when needed.
We also provide a daily bus run for those family members desiring
access to the post facilities.

Slide 5
[Key Aspects]

We will focus on these 6 key aspects through the remainder of the
briefing.

Slide 6
[California Map]

First, the size and location. As you know since you drove (or
flew) inhere, we are about midway between Los Angeles and Las
Vegas, Nevada in the heart of the Western Mojave desert. The
closest town is Barstow and is about 40 miles from Fort Irwin.
Barstow is connected to the post by a two lane road so we are
very isolated in terms of allowing soldiers who might want to go
downtown and do shopping. It does impose some hardships on the
soldiers who are stationed here.

Slide 7
[Live FireMap]

- The post itself is about 55 kilometers on a side--squared off or about 640,000 acres. About 430,000 of those can be used for maneuver.
- In the North we have a live fire area where we fire live fire offense and defense. In the northernmost portion of the live fire area is an old impact area that has been used since WW II the Air Force and the Navy and is still used.Ordnance is dropped there daily.
- Directly to the north is the Death Valley National Monument.
- Further south we have 2 maneuver corridors for force-on-force training. The central corridor goes the full width of the reservation, about 50 kilometers from end to end. The southern corridor, which is far shorter, is also an excellent maneuver corridor.
- Tiefort Mountain is the tallest mountain on post at 5080 feet.
- Over on the west side of the post, NASA has a deep space complex that has massive antennas where they can monitor the probes that go to Mars or Venus and the ones that are active right. Virtually no maneuver occurs on that side of post because of the sensitivity of the instruments they use for deep space exploration.
                    (NOTE: Point on chart.)
- The post proper is located right here.

Slide 8
[Climate and Topography]

- Here you see some of the salient figures about our desert environment.
- The valley floors from the high ground look very smooth and flat. However, when you get down on the ground itself, you will find numerous washes, some with steep sides and others without. From a tactical sense, there is a great deal of usable terrain. As you maneuver across the terrain there are tremendous opportunities to use intervisibility lines and these washes to maneuver armored vehicles.
- The mountainous terrain rises abruptly from the valley floors. Most of that terrain however is not trafficable. Most of it is volcanic, black basalt rock, rugged, and very tough on wheeled vehicles. There have been numerous roads and trails cut over these hills over time so there are significant numbers of avenues of approach over these hill masses.
- There are also several dry lake beds on post. They fill up only when it rains or snows on the post, otherwise they are trafficable.

Slide 9
[Rotations]

- We call the training events here rotations simply because units
rotate in to train and then rotate back out to home station. We
train 12 per year.
- All of the branches depicted participate in the rotations.
- The Air Force plays, and I will talk more to that later. FSB
plays also.
- It varies from rotation to rotation, but all rotations
generally have administrative aircraft. Most rotations will have
attack helicopters. Chem, both decon & recon assets. AD
batteries etc. all play so the full range of tactical and support
units participate.
- They all also come with Military Police.
- We play some contingency and special operations during the
year.

Slide 10
[Air Force - Close Air Support]

- Two different airframes participate in every exercise. In one
rotation for example, the A-10 aircraft might be the OPFOR and
F16s belong to the Blufor. At the start of the rotation we just
inform the unit which air will be opposing force.
- They are given after action reviews back at Nellis AFB. We
provide input on what their flight profile looked like coming
into the NTC, how we thought the attack went and they go back to
Nellis where they are debriefed, and using their thru sight video
cameras, they are given an After Action Review on how they have
performed on their missions here at the National Training Center.
- They additionally carry an instrumentation packet which allows
us to track them when they come to the National Training Center.
We control the airspaces up until 35,000 feet. As soon as they
enter our airspace we know here they are, and in the Star Wars
Building we are able to track them the entire time they are at
the NTC where they show as a moving set of white dots on the
computer screens.
- They do not however carry a package that allows them to be shot
down by our air defense weapons or for them to do air to ground
engagements and kill ground vehicles. That is in the works for
them to procure that kind of system, and we should have it within
the next couple of year.

Slide 11
[Typical Rotation]

- This is what a typical rotation looks like. A unit will arrive
about 5 days out and start to draw equipment from a prepositioned
fleet which we have here at the National Training Center. They
will then move out a field location. One of the battalions will
go to force on force training using the MILES laser training

system. The other task force will go up to live fire using live ammunition. At the 5 day point they will flip over. At the 10 day point they will both go into force on force operations under the control of the brigade commander.
- For 7 of the 12 rotations a participating light infantry battalion will come from a totally different parent division. Divisions will coordinate and have very little opportunity to train with those units because of the distance and monetary restraints that precludes that kind of activity. Once they arrive that light battalion will be assigned to the brigade in rotation and that brigade in rotation can cross-attach so they can give tanks to the light battalion if they choose or they can pull a light company and put it with the tanks and so forth. That light battalion will participate in the full range of training. They will participate in force on force training also up in live force and later in brigade operations.

Slide 12
[Rotation Schedule]

- This gives you an idea of the kinds of rotations that we have conducted over the course of the past year.
- The 48th Brigade was called to active duty, sent to the NTC to train for deployment to Saudi Arabia, and in fact was trained to the level where it was declared combat ready 3 days prior to the war ending.
- 155th Brigade also came to the NTC. Again that was the round out for the 1st CAV Division, but that unit was already in Saudi Arabia and participating in operations. This round-out brigade was training up and again was not sent overseas.
- We then tried a unique thing and we brought in the 40th ID, which is California Army National Guard, and conducted some special training for them called Situational Training Exercises (STX). We essentially did company lanes where they repeatedly attacked a very small opposing force at the company level, both offensive and defensive to see what kind of training proficiency we could get them to and we made a tape on how to do that we have sent around the army.
- Then we brought the 7th ID on Emergency Deployment Readiness Exercise. That is a no notice alert to Fort Ord CA, simulating war has just broken out where you're alerted to prepare to move. They airloaded out of Fort Ord, flew into here and underwent a rotation for 2 weeks.
- During Rotation 92-06 we had a unique rotation in that it was a CONOPS rotation. That is a rotation where multiple units are phased into the NTC under the control of a CORPS cell, in this case III CORP, leading up to a rotation. The training consists of participation by Special Forces, light Infantry, and Heavy Forces. We try to do one of these rotations annually. The advantage is that they give the senior command cells like CORPS practice in actually controlling the multiple forces that can realistically be expected to take place in a modern come-as-you-

are war scenario.

Slide 13
[Offloading Plan Photo]

The way a rotation works is that in the past soldiers flew into, generally speaking, Norton Air Force Base which is down in Los Angeles valley on military aircraft.Most troops now deploy on commercial contracts.

Slide 14
[On Post Population (Desert Shade)]

Once they are here we put them in the Desert Shade. They bring their two man tents and then camp out in the Dust Bowl. It offers some amenities; there are latrine facilities and some rudimentary kitchens that they can use for fool storage and for food preparation.

Slide 15
[M1 Tank Draw]

While they are in the Dust Bowl they draw their equipment. We have 2 battalions of prepositioned tanks here, plus an extra 10%. I also have two infantry battalions here plus an extra 10%. So, in the case of tanks, we have 122 M1A1 tanks here in the preposition fleet. These vehicles are maintained by a contractor. The unit must fix it and use it throughout the rotation.
- The tanks are in pretty good shape. They normally run about an 85% operationally readiness rate. About 15% of them break down during the course of the rotation, but they are repaired rapidly. Normally, units will go into battle with 24/28, which is what you would expect from any unit anywhere.
- Units will bring all of their maintenance folks with them. Part of the training is how well units can maintain their equipment. We pull maintenance on our fleet between rotations to insure vehicles are in the best possible shape.

Slide 16
[Trucks on Rail Car]

Some of the equipment that a unit does bring are things that we don't have here in our prepositioned fleet. For example, some of the communications equipment, but also some of the intelligence pieces of equipment, usually where we don't have enough extra in our Army to stockpile some out here. That equipment is normally railed to the Marine Corps Logistics Base at Yermo. That is the closest government railhead. The equipment will be offloaded at the railhead and roadmarched onto Fort Irwin.

Slide 17
[Typical Tactical Mission]

- Typically, when units come here to fight, they will conduct these missions.
- The way this works is 120 days prior to a brigade coming to the National Training Center, they will send a letter specifying the missions that they would like to do.
- It is normally based on their Mission Essential Task List. In other words the brigade looks at the battle plans they have been given by the Army and determines which missions are most essential to train. Based on that letter, which tells what a unit wants to do, we build a scenario for them. No matter how many times a unit comes back, we always build a different scenario for them. We go back into our files and look at that particular unit. We do an assessment at how many of the commanders have been here before or are new, and then we write a scenario that is unique so that they could not bring the plans from the last rotation or if they could it would do them no good.

Slide 18
[32d Guards Motorized Training Regiment]

- The 177 Armor Brigade changes to become the 32d Guard Motorized Rifle Regiment and provides the anvil that we forge the Bluforce training on. That is the countertraining force. And that is one of the keys to the National Training Center having a world class opposing force.

Slide 19
[T72]

- Its vehicle is the 30 year old Sheridan. They have been visually modified with the addition of fiberglass on the sides. The turret shape has been modified with fiberglass; the gun tube is a piece of plastic sewer pipe that has been painted.
- All it carries on it is the MILES, the Multiple Integrated Laser Engagement System. What we have is a vehicle that comes close to replicating what a Soviet vehicle looks like, and it does a fair job of that at a distance, but more importantly, it is visually distinct from our own equipment.

Slide 20
[MTLB (photo)]

We also have some actual Soviet equipment. Right now field 6 MTLBs, and they tow the MT-12 100mm antitank gun. These vehicles actually participate with the OPFOR in all operations. The regimental reconnaissance, which consists of BMPs and BRDMS uses

actual Soviet equipment so that our soldiers become accustomed to
seeing Soviet vehicles on the battlefield and become accustomed
to their visual, thermal, and audio signatures.

Slide 21
[HIND]

- We use a modified UH-1 to replicate the HIND helicopter. It
has fiberglass additions and wing storage on the side. Obviously
it doesn't look exactly like a HIND, but it looks enough
different that it is readily distinguishable from U.S. aircraft
as being OPFOR. This aircraft is also MILES equipped and can
kill with missiles out to 4 kilometers and can be killed by
ground systems, as well as, all of the air defense systems.
- He uses Soviet tactics. He does not hover; he makes gun runs.
They study and use the Soviet tactics.

Slide 22
[OPFOR Augmentation]

- Because the brigade is not large enough to represent a full
regiment we have to augment them for every rotation. Normally 3
infantry companies and an engineer company come to Fort Irwin
from somewhere in our Army to play opposing force during the
rotation.
- The companies come from the active, reserve, and national
guard. Once they arrive here at the NTC we send them to the
Opposing Force Academy where they learn how they will operate
throughout the course of the rotation. We've also had 1 company
from the Scottish Highlanders, British Army, here participating
as Opposing Force; 1 company of the Princess Patricia Light
Infantry, the Canadian Army, here participating as opposing
force; and the U.S. Marine Corp has sent numerous companies here
to participate as opposing force.

Slide 23
[2 Soldiers w/MILES]

- The Multiple Integrated Laser System (MILES) is really the
second major piece of the NTC, after the OPFOR. Having a system
that allows you to engage in direct fire battle and have the
ability to both kill and be killed.
- These two soldiers are wearing the individual MILES.   will
describe them briefly. They are wearing harness' and on the
harness are detection sensors, indicated by little black bulges.
Those pick up laser beams that are fired at them to tell them if
they have been near missed or hit through an audible tone. They
also have a HALO on their helmet so if just their head is exposed
they can be shot in the head.
- They've got a transmitter attached to their weapon. The read

device on their rifle is a blank adaptor so they can fire blanks in semi and automatic mode from their weapon. Beneath that is a transmitter that is boresighted to the weapon so that they fire using their normal weapon sights. It fires a laser beam and that laser beam carries with it a code and so if he were to shoot this soldier and his detection sensor picks up the beam the code would tell him he is being shot at by a rifle. It knows that a rifle can kill him and it will register a kill.
- If killed, the harness is equipped with a loud annoying buzzer that sounds continuously until physically turned off. The soldier must remove the key from his transmitter on his rifle and place it in his harness to make the sound go away, but that also deactivates his transmitter so he can no longer shoot and kill anyone. If he takes the key back out, the harness will again buzz. It takes a special key that only the controllers carry with them to deactivate and reset the harness. So once he has been killed he is effectively out of the battle play.
- The significance of the coding is that if the soldier were to turn around and fire his rifle at the tank, the tank's sensor detection apparatus would look at the coding and know that a rifle can't harm it and ignore the signal. So, the only weapon that can kill a tank is in fact another weapon capable of killing a tank, such as a tank or a TOW antitank missile system.
- ere behind them is a tank with a MILES detection harness round the turret. His MILES transmitter is in the breach of the 120mm main gun and is boresighted for the tank so for the gunner it is transparent. He is using his normal tank sights to engage other vehicles.
- When he fires, he fires a Hoffman charge that is a pyrotechnic explosive device giving an explosion and a puff of white smoke to provide a firing signature that you can tell from several kilometers away that tank is engaging you. is machine gun is also MILES equipped. It has a transmitter on the .50 caliber and the piece you see over the barrel is a blank adaptor so that he can fire .50 caliber blank ammunition, and again, he can kill an infantry and light skinned vehicles with his machine-gun but he cannot kill another tank.
- If this tank is engaged and gets a near miss you will see this yellow light blink 3 - 8 times and then stop. This tells the crew that they are being shot at by something that is capable of killing them, but has missed them, allowing them to take appropriate reaction. If it is an actual kill the light will flash and will not turn off until reset by an Observer Controller, and they're be an annoying buzzing sound through the intercom system in the vehicle.
- The Rules of Engagement here at the National Training Center say that when killed the vehicle must immediately stop, traverse his turret to the rear, and elevate his gun tube. We have enough Observer Controllers so that we do not have a problem and that system works very well.
- While a very effective system, it is not a full gunnery system so this is not a device allowing a unit to accurately train for live fire. Ballistically it is different than gunnery. You must boresight the MILES system daily, just like you must boresight

your tank every day if you're going to fire live fire so a lot of the individual discipline things that you need for live fire are developed if you're using MILES.
- What it fires is a laser beam. Ballistically, lasers are different. Ballistically, again, it is not working through the computer in the tank. you don't have to do the muzzle reference updates like you have to do for live fire. You don't have to get the barometric pressure and all the other things that have to be set in the computer.
- We do have a Unit Conduct of Fire Trainer for the M1 tank. We have it here also because the OPFOR is equipped with M1 tanks and must sustain their Blufor skills. All units so equipped have UCOFOTs.

Slide 24
[Smoke Markers]

- For the Field Artillery we use two systems and I'll describe them both. First we have fire markers and they ride around in HMMWVS carrying pyrotechnics with them that they can both throw on the ground and fire up in the air as airbursts.
- They also have the Position Location System on their vehicles so when artillery is called to a specific grid, one of these fire markers is called to that specific location by radio and he will fire both air and ground burst simulators and the density of simulators he fires replicates how much artillery is actually coming in.
- They are very responsive. They are always at the right place because they have the Global Positioning Location System.

Slide 25
[Top of Tank w/Antenna]

- Fire markers are only half of the artillery system. We have another system that is actually carried on OPFOR and Blufor OPFOR vehicles. That system is called CATIES.
- What it consists of is a box that caries 60, 12 gauge shotgun shells. Those shotgun shells emit both an explosion and a white puff of smoke. It also has a transmitter with an antenna on the back.
- When artillery is fired here at the National Training Center a signal is sent out from this building to radio towers. Those radio towers paint a signature where that artillery is being fired. If you drive into that artillery this antenna picks it up and it picks up a code that tells it 155mm, 72 rounds or whatever it was. Programmed into that computer is what kind of vehicle it is on. It will start to fire the shotgun shells to simulate the incoming artillery and a cable hooks it to the MILES and so his light will go off and he will die as a result of being hit by the artillery fire.

Slide 26
[Minefield]

- The way we play obstacles here at the NTC is that if you want
wire, you put wire in. If you put the wire in very good you get
a very good obstacle; if you put it in poorly then you get a very
poor obstacle. It is a matter of unit performance.
- We don't help, so if they put the wire in and don't drive the
pickets in very far so that a tank can drive right over it, then
they didn't do a very good job putting the obstacle in. If you
want a tank ditch of a dirt berm or anything else then you must
dig it. If you want mines then you have to emplace mines. If
you don't arm the mines then they don't count and so there is
nothing notional. If you want if here at the National Training
Center then you must do it.

Slide 27
[M1 Crossing AVLB]

This shows a picture of a tank crossing a tank ditch from the
48th Bde. To negotiate obstacles he must do it as he would in
war. If he doesn't have the bridge he can't cross the ditch
unless he uses some other resource he has to reduce the obstacle.

Slide 28
[Instrumentation]

In terms of the instrumentation here, every vehicle at the NTC
carries a unit called "B-unit." This unit is a position location
box. Every few seconds, radio towers that we have at the NTC
send out a signal and query all of the vehicles playing at the
NTC and ask the vehicle "where are you?" Through that
transponder we will then know with our computer where they are.
Signals also ask the unit "have you fired?" Have you been hit,
have you been near-missed, have you been killed?" and so we
collect al that data in the Star Wars building transparent to the
crew. The crew doesn't know that his vehicle is being queried as
to all of that information. We do that for both the opposing
force and the Blue Force.
- The advantage of that is if you send your scouts out at night,
if later during the after action review the scouts say we went
here, we can show him conclusively that he really didn't go there
at all.
- We know al of the time exactly where he is to plus or minus 3
meters. And so now in the after action review it becomes very
easy for us to explain what happened to the individual, and as a
result, we spend all of our time exploring how we can improve
what was done instead of arguing about what actually happened.
- The folks coming here know the capability of the system and
they thus don't argue. Years ago in my previous example the
Scout Platoon leader would argue for a minute and the Observer
Controller would say okay let me show you where you were and he

would show his vehicle moving on the computer screen, but now they believe it when we tell them. That is a very great capability.

<center>Slide 29
[TAF Picture]</center>

- On addition to that we have video capability. We have cameras in both fixed sites on top of mountains at the NTC and we have portable cameras that move to battle sites where they film battle. All of that comes into Building 988, the Star Wars Building.
- In addition we have the capability to record 80 radio nets. And so we monitor the majority of the player-unit radio nets here. We listen to everything they say, and will record certain radio conversations. If you came to a junction in the road as an example, and choose to go left--the commander said to go right-- we might tape that. So now during the after action review we play that radio cut, the unit hears the transmission ordering the unit to go right. Now that we've proved the order to go right, we explore why the commander made that decision.
- So we have a tremendous capability here to determine precisely what happens.
- In the Star Wars Building we have officers and noncommissioned officers who sit at computer screens watching the battle on a piece of computer-generated terrain. They also have a video so they can see what the video cameras in the field are looking at and in their headset they can hear all of the radio transmissions for the unit that they are controlling.
- There is another controller out in the field with the unit so if you come here as a battalion commander you will have LTC with you the entire time who is providing feedback to you the entire time on how you are doing. The field OC will be in contact minute-by-minute with an individual back here who can give him information that he doesn't have, like artillery is about to be fired at this location or scouts are lost. I see them here. Through continual dialogue, our observer controller out in the field has a complete picture of how the battle is going even though he is standing right beside you, seeing what you are seeing.

<center>Slide 30
[Tank Target]</center>

- At live fire I've got 1000 targets. This replicates a T-72 tank. The target would be dug in so you could only see it from the tracks up. The target itself is plywood. It has got a thermal blanket on it so the target gives a thermal signature. The target mechanism is a standard Army target lifter. They're all computer controlled. The only difference is that normally these systems are batter powered, while here at the NTC they are solar powered because of our constant access to cheap sunlight.

It saves us considerable amount of money.

Slide 31
[Live Fire Range]

- On the live fire we do a regimental attack against a defender.
The defender is in a position down here off the screen. He is
looking out over a Drinkwater Lake, which is a dry lake bed down
in Drinkwater Valley. This is the regiment coming at him. there
are 700 plywood targets available in the regiment so we can alter
how it appears to come.
- As they move we generate smoke through smokepots and other
systems to replicate the dust that kicked up by a regiment. We
use a regiment down on force-on-force so we have a very good idea
of the necessary dust and confusion, enabling us to do a very
good job of replicating that upon the live fire.
- As the regiment exposes itself, the battalion will start to
engage the targets. As they kill targets those targets will not
come up as they come in closer to the defenders. So if he has a
123 targets as they start, and he kills 20, then he will only
have 103 targets come up the next time. So as he kills the
regiment he actually decreases the number of targets. If he
kills none, then he eventually gets overrun or bypassed by 123
vehicles.

Slide 32
[Live Fire Target Emitting Smoke]

This just shows you one a close up of a hull down vehicle
engaging the targets in the live fire. Again, we try and give it
a realistic signature.

Slide 33
[Operations Group]

- the third piece to the NTC, with having a world class OPFOR
being first, having an engagement system that allows you to
definitely determines what happened as second, is the Operations
Group such as we have here with professional trainers that work
with the units that come here for training.
- COL Harmeyer is the commander of the Operations Group.
- He has a lessons learned cell that captures lessons learned,
write them up, and passes them around the Army.
- He has a team that links up with the brigade HQ and then again
a team that links up with each of the battalions that come here
for training.
- So there is a duplication for both observation and training
purposes at every level.

Slide 34
[Observer Controller Positions]

- This is what a typical team looks like. The head Observer Controller drives his own high mobility vehicle. He is listed as the Senior Task Force Trainer. For a tank battalion he would be an ex-tank battalion commander who has already successfully commanded a tank battalion. In 100% of the cases here he has commanded and then gone on to the War College and then come back here as an Observer Controller. He is an individual who is well respected for his professionalism, his knowledge of tactics, and operational art. He provides the feedback to the battalion commander who is undergoing the training.
- Then we have individual trainers. These are sergeants who go to soldiers in the unit and test them on their individual trainers. These are sergeants who go to soldiers in the unit and test them on their individual skills. they might test on or how to use their individual weapon as one example and then they report to the Battalion Commander undergoing training about how proficient his soldiers are. So that Battalion Commander is fighting an OPFOR, he is being provided all kinds of feedback on how he is doing personally, how his staff is doing, how his companies are doing, down to and including the skill levels of his individual soldiers.

Slide 35
[Daily After Action Reviews]

I would say that 75% of all learning occurs at the Daily After Action Reviews. We use something called the Discovery Learning Process.
- As you have seen through our automated system we can determine very accurately about how and why things happen. What we do in the After Action Review is that we show the task force undergoing the training what happened. They then discuss among themselves why it happened. And then we lead them through a discussion about how they can fix it for the next operation.
- We generally focus on key issues that were the proximate cause of the success or failure of the mission. They walk out with a very clear understanding of how to fix those things and what we see is a unit will come in at one level of proficiency and leave here much higher because they improve every day that they are here.
- This is something that we have done in our army that most armies have not done and that is this after action review process. This is a more important process and environment than you might think because you are sitting there as a battalion commander and two rows back is the Scout Platoon Leader. An AAR van is a very open environment. The net result is a tendency to expose problems rather than to sweep them under the rug. One result was that in Saudi Arabia we knew what our weaknesses were so we worked at our weakness. This learning process that goes on has markedly changed our Army. Now leaders at all levels are

active players and must be professionally competent because they always have the opportunity of being questioned--in a professional sense.

Slide 36
[Live Fire AAR (COL May photo)]

We do the after action reviews in mobile vans. The vans are air-conditioned in the summer and heated in the winter. The AARs have a restriction in that they cannot go beyond 2 hours, because we have found that folks lose interest beyond 2 hours. Normally, we will have the after action review about 5 hours later.

Slide 37
[Final After Action Review]

Another key aspect is that at the end of the rotation the battalion commander will conduct an after action review for his leadership. (NOTE: Picture shown of old theater). What we want him to do in that review is to determine the strengths and weaknesses of his own unit, but more importantly to formulate what kind of training program he should have when he goes back to his home station.

Slide 38
[Take Home Package]

We also provide a Take Home Package to each unit. They get all the video tapes of every battle they participated in at the NTC. There are video tapes of every after action tapes that was conducted. These tapes they take with them and review at home station. If they want to use a particular battle as a teaching point they can use a video machine at home station.
- In addition to the video tapes, the commander gets a book mailed directly to him organized mission by mission, battle by battle. It talks about the strength and weaknesses of his unit in each of those battles.

Slide 39
[Training Conducted]

This gives you some idea of how many rotations we've had, _____. How many battalion commanders have been trained; how many units by type that have been trained; number of commanders, officers, soldiers that have been created on our Army because those individuals who have trained here have all gone on to different positions within the Army and shared their knowledge.

Slide 40
[Reserve Component Training]

The FORSCOM Leader's Training Program is unique. From an active
brigade, Reserve brigade, or National Guard brigade, the
commander and all of this staff will come to the National
Training Center for 3 days and will participate in a program.
They are actually taught classes on the opposing force doctrine,
on our doctrine, and they actually participate in a mission. In
a classroom they are given the same mission that the player is
given. They write an operations order, they plan how they would
fight the mission, and the same day that the mission occurs they
will be out on a hill looking at how the Blue Force executes the
mission. Since they will have written their own plan, they will
be able to evaluate their plan and how the player's plan is
executed.
- Participants get a lot of benefits from a leadership sense.
Substantial numbers of reservists have come through here as Blue
Force players.

Slide 41
[The Future]

- Here are items that point to the future of the National
Training Center. They cover a range of tactical and quality of
life changes that we are earnestly pursuing to both broaden our
tactical capabilities and to improve the quality of life for
soldiers here at Fort Irwin.

Slide 42
[Tank Night Firing (Final Slide)]

That concludes the overview of the NTC, I'd be happy to entertain
any questions.

JRTC ORIENTATION

JRTC

JOINT READINESS TRAINING CENTER

Important to maintaining the ability to fight and win is tough, realistic training, and force on force training provided for the combat units of our Army is what the Joint Readiness Training Center (JRTC) is all about. Building on the success of the National Training Center, the JRTC was established making it the second component of the Army's Combat Training Center Program. The JRTC was established to conduct stressful, realistic combined arms training for both Army and Air Force contingency forces under conditions of low to mid intensity conflict. Goals for JRTC are: increase unit readiness; develop bold, innovative leaders through stressful exercise; embed airland battle doctrine throughout the Army and Air Force, provide immediate training feedback to the Army and Air Force; provide immediate feedback to participants and provide a data source for doctrine, training and equipment improvements across the Army.

Located at Little Rock Air Force Base, the JRTC headquarters coordinates with Army and Air force units to plan and support the force on force exercises held on the 72,000 acres of training area at Fort Chaffee, Arkansas. Participating Army units may be active or reserve component light infantry, airborne, air assault, ranger or special forces battalions based anywhere in the world.

Mechanized and armor units routinely participate as part of the combined arms team. These units deploy their troops, equipment and supplies to an intermediate staging base and begin preparation for combat operations.

Months prior to the beginning of an exercise, the JRTC planning staff and unit commanders meet to plan the exercise scenario. It is based on the units contingency mission and the division and brigade commander's training objectives. In addition Air Force planners assist in the planning of the Air Force's operational support and participation in the exercise. The scenarios are built around the mythical island upon which a U.S. allied nation and a hostile force enemy nation exist. The enemy the player unit will face in the exercise is the Opposing force(OPFOR). They are equipped as an elite uniformed force and are trained in all levels of combat.

The rotation lasts 11 days, usually with a Low Intensity and Mid Intensity phase. Throughout the rotation, the observer/controllers (OCs) observe, coach and evaluate the troops on their execution of doctrine throughout the exercise. Each soldier, weapon and tactical vehicle participating in the exercise is equipped with a multiple integrated laser engagement system(MILES). The laser beam emitted by the MILES will simulate personnel casualties and vehicle damage.

Casualties assessed must be treated as an actual casualty. Wounded soldiers must be evacuated to a treatment center and cared for by medical personnel before being returned to the exercise as replacements.

JRTC stresses battlefield realism in all phases of training. Civilian villages throughout the training area depict the types of villages our soldiers are likely to encounter during a contingency operation. The villages are manned by host nation civilians who role play members of the village ie, farmers,shopkeepers. These villagers interface with the player unit as well as special forces civil affairs and psychological operations teams. Actual TV and newspaper personnel are inserted into the exercise as a DOD press pool. This further enhances the battlefield experience for the commander and his staff. Concurrent with the exercise, units conduct platoon level livefire operations. Target arrays replicating friendly units and civilians are included to emphasize techniques to avert friendly fire situations.

A major facet of the exercise is the integration of close air and air lift support of the Army task force on the ground. Air Force search and rescue teams insert into enemy territory to locate downed pilots. Additionally, air force units conduct medical evacuation and air reconnaissance.

Marine air and naval gun liaison company teams provide an additional combat multiplier for the ground commander by bringing naval gunfire to bear anywhere on the battlefield. The integration of the navy and air force into the scenario allows training in missions that they will perform with the army in combat.

Our ability to ensure U.S. security and defend overseas interests depends on the combat readiness of our forces. The JRTC provides the opportunity for the Army and Air Force units to train leaders, airmen and soldiers to fight and win in any potential conflict. This degree of training proficiency can be achieved through the demanding, stressful, high quality training that our soldiers and airmen experience at JRTC.

JRTC
ORGANIZATION

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 EMC                       |
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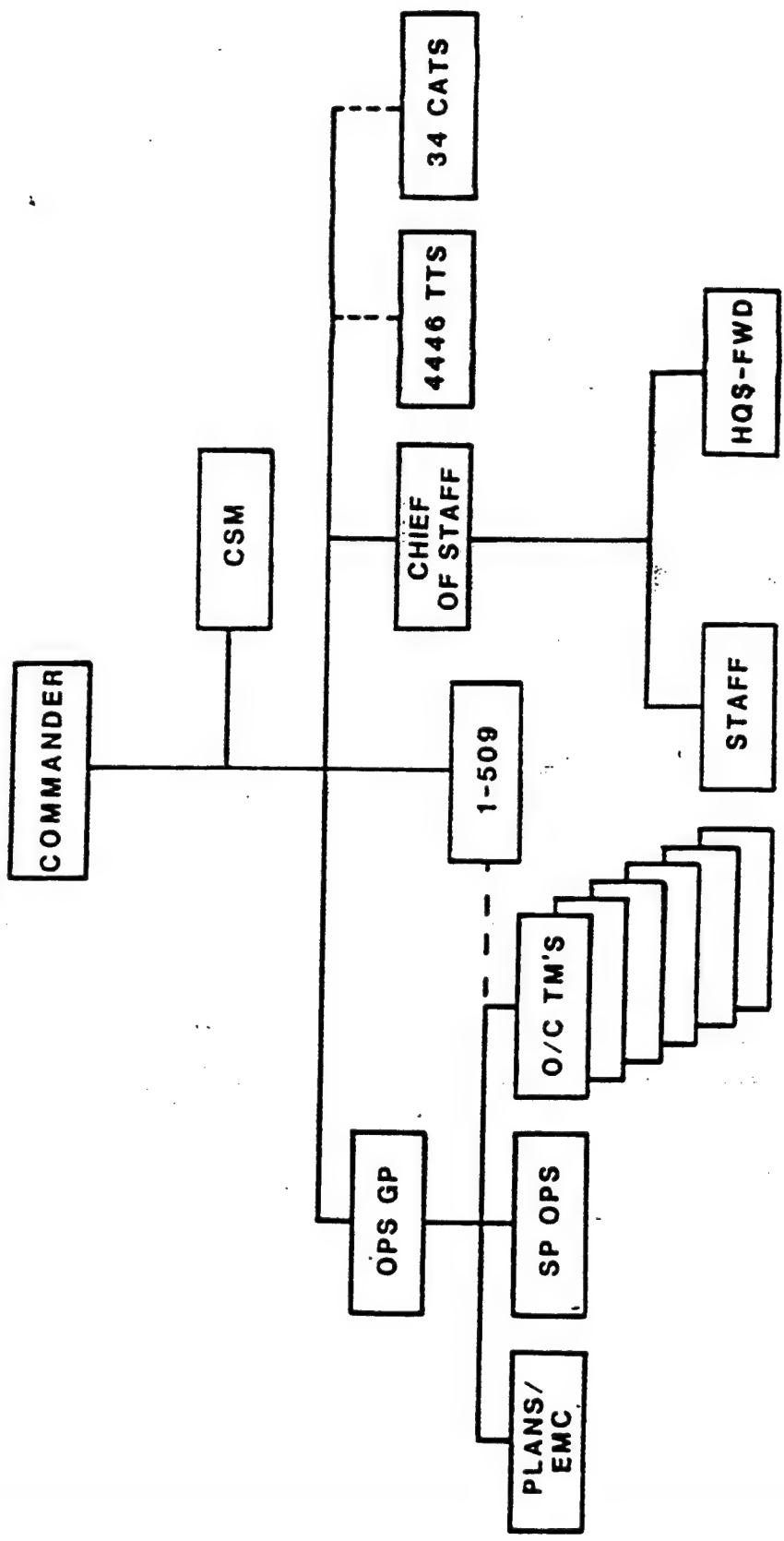
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STRESS OF CONTINUOUS OPERATIONS

	UNIT DEPLOY'S TO ISB	O/C'S TO UNIT OR ISB	SEARCH AND ATTACK

TACTICAL PLANNING

D-8	D-7	D-6	D-5	D-4	D-3	D-2	D-1	D-DAY	D+1	D+2	D+3	D+4

→ DEPLOY →

BDE ISSUES OPORD

PLANS/EMC TO UNIT'S HOME STATION TO ISSUE DIV OPLAN

STRESS OF CONTINUOUS OPERATIONS

PREP TO DEFEND										
D+5	D+6	D+7	D+8	D+9	D+10	D+11	D+12	D+13	D+14	D+15

HASTY OR INFILTRATION ATTACK

DEFEND

DELIBERATE ATTACK

FINAL AAR

RECOVERY/REDEPLOY
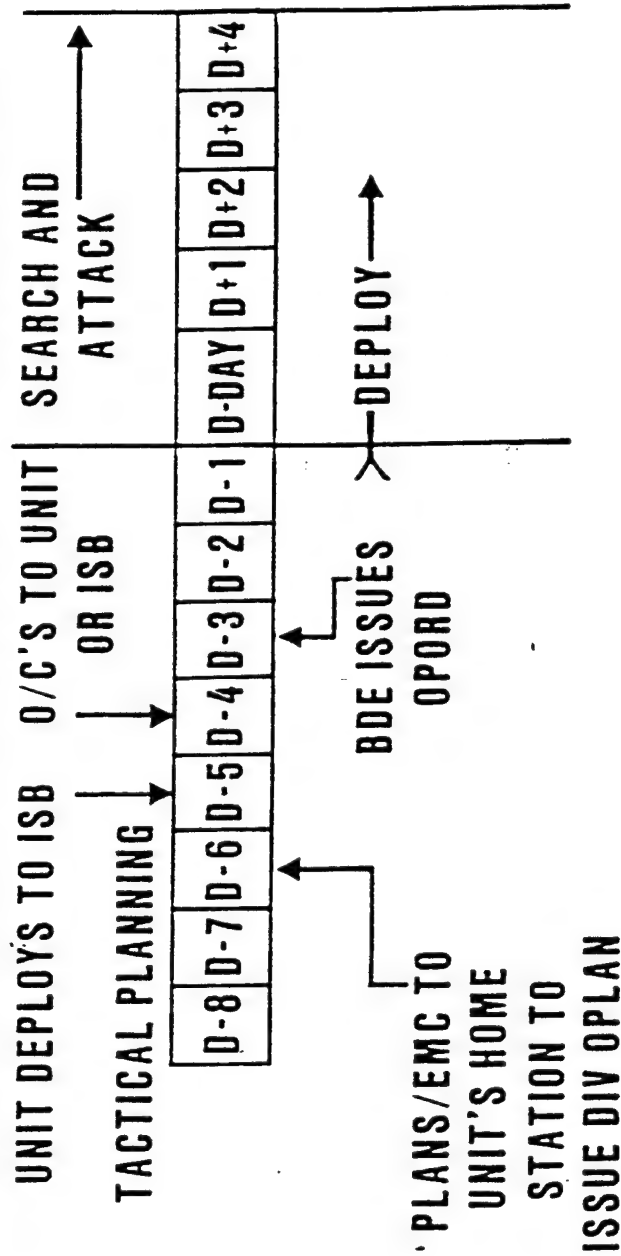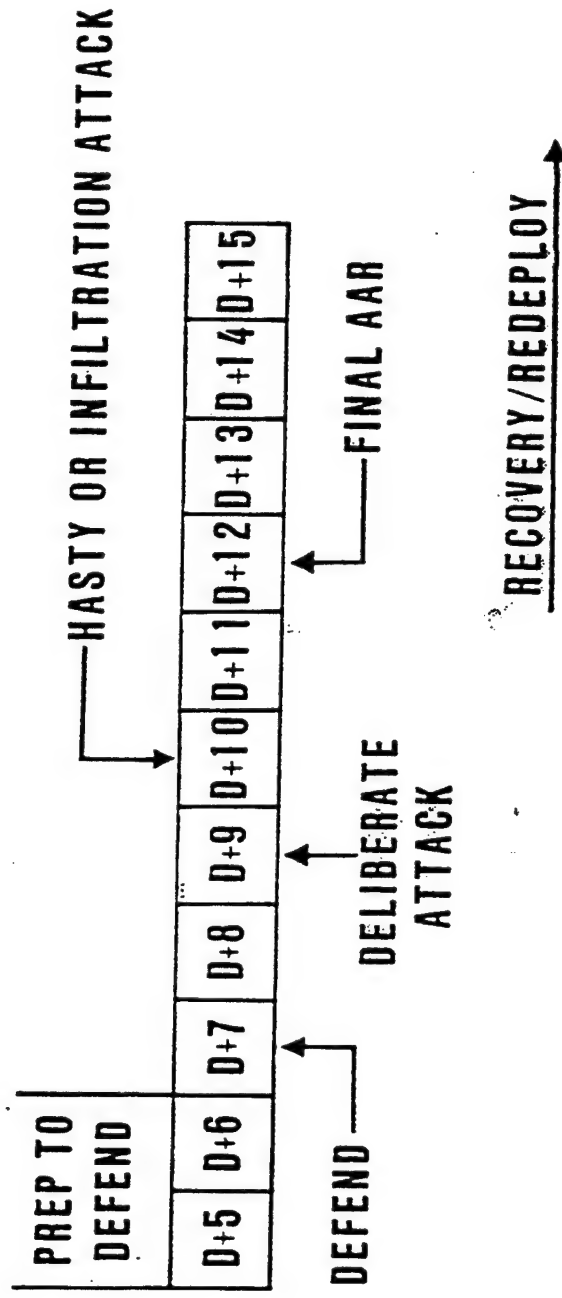
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ARMY BRIGADE TASK ORGANIZATION FOR TRAINING
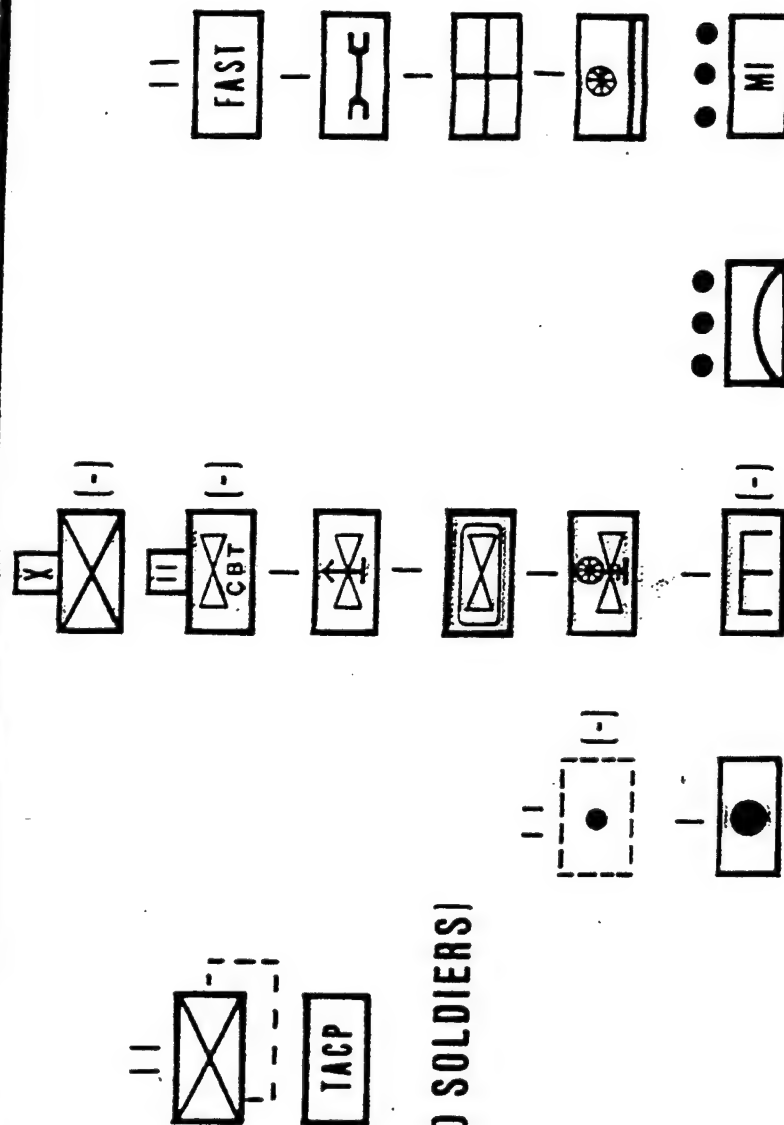
(1400 SOLDIERS)

SCENARIO

- REGIONAL CONTINGENCY

- SURROGATE THREAT

- HOST NATION

- FORCED ENTRY OR NON-FORCED ENTRY DEPLOYMENT

- 5 DAYS LOW INTENSITY OPERATIONS FOR ARMY BDE, MAC & TAC

- 6 DAYS MID INTENSITY OPERATIONS FOR ARMY BDE, MAC & TAC

- UP TO 21 DAYS OF OPERATIONS FOR SPECIAL OPS UNITS

JOINT READINESS TRAINING CENTER

IMPERATIVES OF THE JRTC

- UNFAMILIAR RESTRICTED TERRAIN

- PROFESSIONALLY DEVELOPED, CONTROLLED SCENARIOS

- HIGHLY CAPABLE OPPOSING FORCE

- JOINT, ALLIED OPERATIONS

- CONTINUOUS OPERATIONS WHICH STRESS UNITS FROM THE SQD/PLATOON THROUGH BRIGADE LEVELS

- INTEGRATION OF SP OPS FORCES

- INTEGRATION OF RESERVE COMPONENT UNITS

- UNCOMPROMISING, OBJECTIVE EVALUATION TO A UNIFORM STANDARD OF PERFORMANCE

UNITS TO BE TRAINED AT JRTC

ARMY

FORSCOM

6TH ID (L)
7TH ID (L)
10TH MTN DIV
82D ABN DIV
101st AA DIV

SOCOM

75TH RANGER RGMT
SPECIAL FORCES

WESTCOM

25TH ID (L)

USARSO

193D BDE

ARNG/USAR

6TH ID (L) ROUNDOUT
10TH ID (L) ROUNDOUT
29TH ID (L)

JOINT READINESS TRAINING CENTER

UNIT FEEDBACK/LESSONS LEARNED

TACTICAL AFTER ACTION REVIEW (AAR)
- SQD THRU BN TF
- AFTER COMPLETION OF EACH MISSION

SYSTEM AAR
- CS/CSS (FIRE SUPPORT, AVIATION, COMBAT SERVICE SUPPORT)
- AFTER COMPLETION OF MULTIPLE MISSIONS

TAC AIRCREW AAR (DEBRIEF) CONDUCTED ON SITE AT LRAFB

FINAL AAR CONDUCTED BY CDR/SR OC AND TF/UNIT CDR'S ON D+12

LESSONS LEARNED DEVELOPED BY COMBINED ARMS CENTER (CAC) CELL

JOINT READINESS TRAINING CENTER

ARMY BENEFITS FROM THE JRTC

- QUALITY TRAINING EXERCISE FOR BATTALION TASK FORCES BEYOND ARTEP CAPABILITY

- TACTICAL EXPERIENCE GAINED BY INDIVIDUALS WHO PARTICIPATE

- IMPROVED INTENSITY, FOCUS, STANDARDS OF HOME STATION TRAINING

- INPUT FROM LESSONS LEARNED TO REFINE OPERATIONAL AND TRAINING DOCTRINE, ORGANIZATIONAL STRUCTURE AND EQUIPMENT

JOINT READINESS TRAINING CENTER

USAF BENEFITS FROM THE JRTC

- AIR FORCE TRAINING OBJECTIVES MET

- FLYING AND GROUND MISSIONS DRIVEN BY TACTICAL SCENARIO

- APPROPRIATE INTERFACE WITH THE ARMY FOR PLANNING AND EXECUTION

- MISSION EXECUTION UNDER REALISTIC CONDITIONS

- IMMEDIATE FEEDBACK ON MISSIONS

JOINT READINESS TRAINING CENTER

JOINT TRAINING PAYOFF

- CAPITALIZES ON SCARCE TRAINING RESOURCES BY CENTRALIZING ASSETS UNDER REALISTIC, CONTROLLED CONDITIONS WITH IMMEDIATE FEEDBACK TO UNITS

- PUTS ARMY AND AIR FORCE "FIGHTERS" FACE TO FACE AS THEY WILL OPERATE IN COMBAT

- UNCOVERS DISCONNECTS IN ARMY, AIR FORCE AND JOINT PROCEDURES, DOCTRINE, EQUIPMENT AND ORGANIZATIONS WHICH WOULD DEGRADE CAPABILITIES IN COMBAT

JOINT READINESS TRAINING CENTER

Revise Research Issue

Purpose: Your research issue is the basis for deciding which data sources in the Archive you will select, the specific elements you will extract, and the type of analysis you will conduct. This module will illustrate how to look at your issue statement critically to make it more specific, concise, and observable.

Resources:

- Facilitators who will discuss optional approaches.
- Subject matter experts who will answer questions about procedures at the CTCs.

Estimated Time To Complete: One hour

Certification: You will show your revised issue to a facilitator who will check it in terms of specificity, concision, and observability.

How To Proceed: Read through the module to see the desired characteristics of a final issue statement. Review your issue statement in light of those characteristics. If needed, revise your issue so it is specific, concise, and observable.

Performance Objective: Working with a draft issue from your area of interest, revise the issue so it is specific, concise, and observable.

Skills Assessment: Show your revised issue to one of the facilitators.

Revise Research Issue

Skills Assessment

Write the issue you want to study during your independent research below:

Show the issue statement to a facilitator. The facilitator will check whether the statement is specific, precise, and observable.

January 13, 1993

Revise Research Issue

The foundation for research in the CTC Archive is an issue to be studied. Most issues can be traced to one of three sources:

- You, or someone in authority over you, suspects a recurring problem is reducing the effectiveness of Army units.

- You want to check whether a change in doctrine, training, organization, materiel, or equipment is enhancing performance.

- You want to check the status of performance in an area where you are the proponent.

Regardless of the genesis of the issue you are studying, your efforts will be most effective if the statement is specific, concise, and observable.

Revise Issue To Make It Specific

There is a strong temptation to try to cover too much. For example, if you are interested in leadership, you probably care about NCOs and officers from platoon through corps. Unless you have a real big staff (such as New Jersey), you will need to focus the issue to a size that is manageable. Three revisions are frequently required:

- Specify the echelon(s) of interest. Echelon could be crew, platoon, company, task force, or brigade. As a practical matter, however, most information from CTCs is at the task force level, with reasonable information about companies and special platoons (such as scouts or mortars).

- Identify players of interest. Players are the duty positions, units, or weapons systems whose actions you want to examine. For example, if you decided to focus on leadership at the company level, you would want to specify whether you were interested in company commanders, first sergeants, or both.

- Define vague terms. You will be so familiar with the context of your issue that you are liable to include terms that are subject to a variety of meanings. For example, "leadership of company commanders" might refer to leader competencies such as communication or the overall influence of the company commander.

For example, assume that you decide to study the effects that continuous operations have on the battle. Defining terms will help you focus your research:

effects: Who are the players being affected? key leadership? staff? subordinate units?

continuous operations: for what length of time?

outcome of the battle: direct outcomes (such as casualties) or (indirect contributor (such as quality of orders)?

A sample revision might be:

Operations that require maneuver companies to conduct battles over more than 48 hours have a direct impact on the number of casualties suffered by the maneuver companies.

Practical Exercise 1 illustrates considerations in revising an issue to make it specific.

Practical Exercise 1: Revising an Issue To Make It Specific

For each issue below, underline the terms that should be revised to make the issue specific.
1. Are NCOs being used to their full potential?
2. Why doesn't the indirect fire system work as it is supposed to?

Check your responses on the next page.

---

1. Are <u>NCOs</u> being used to <u>their full potential</u>?

NCOs--Need to specify players: Staff NCOs, first sergeants, platoon sergeants, or squad leaders? Some combination?

their full potential--Need to define: Tailor responsibilities to reflect abilities of NCOs? Have clear roles in each phase? Responsibilities consistent with doctrine?

Possible more specific statement: Are first sergeants being used according to doctrine?

---

2. Why doesn't the <u>indirect fire system</u> work <u>as it is supposed to</u>?

indirect fire system--Need to specify players: Mortars, artillery, FIST?

as it is supposed to--Define terms: Given inappropriate missions? Inflict insufficient casualties? Not sufficiently integrated?

Possible more specific statement: Why aren't mortars integrated with other indirect fires?

Revise Issue To Make It Concise

The issue statement communicates: Often to others (if you must tell a colleague or superior what you are doing) but always to you and your staff. The more concise your statement is, the more likely it is to convey a consistent message. Apply basic rules of good writing such as:

- Delete unnecessary summaries.
- Delete unneeded quotations or data.
- Remove repetitive clauses and sentences.
- Change passive voice to active voice.
- Remove unneeded comparisons, descriptions, and modifiers.
- Eliminate awkward phrases.

Practical Exercise 2 illustrates the considerations to make an issue more concise.

Edit the following issue statements by putting brackets around wordy or unnecessary phrases and writing a more concise alternative.

1. This study will examine the question as to whether brigade and task force staff operation procedures do not provide the ability to ensure synchronization planning in a timely manner.

Alternative:

2. Evaluate the regiment in its entirety as it relates to the seven battlefield operating systems and special emphasis will be given to assessing the regiment in reconnaissance/security operations and in assessing the regiment in a defend/delay in an economy of force role.

Alternative:

Check your editing and alternatives against the suggestions in the feedback on the next page.

1. [This study will examine the question as to whether] brigade and task force staff operation procedures [do not] [provide the ability to] ensure synchronization planning [in a timely manner].

Alternative:
Do brigade and task force staff operation procedures enable staff to plan synchronization in the time available?

2. Evaluate the regiment [in its entirety] as it relates to the seven battlefield operating systems and [special emphasis will be given to] assess[ing the regiment in] reconnaissance/security operations and [in assessing the regiment] in a defend/delay in an economy of force [role].

Alternative:
Evaluate the regiment in relation to the seven operating systems with special emphasis on reconnaissance/security operations and defend/delay in an economy of force.

Revise Issue To Make It Observable

You want to decide as soon as possible what kinds of effects you will look for to confirm or reject your issue. Unless you are very familiar with the data available, you should not be rigid early. But you should at least decide the type of measures of performance that will be your criteria. You should consider at least three types:

- Overall effectiveness: Possible measures are survivability (proportion of weapons systems that survive the battle), lethality (proportion of enemy systems killed), and the METT-T Index (covered in the TRACS section of the Combat Analyst Workstation module) which combines survivability, lethality, and terrain control.

- Intermediate effectiveness: You will frequently look within a battle to see how your players perform. For example, if you study intelligence preparation of the battlefield (IPB), you will probably look at the quality of products prepared by the S2. If your issue relates to fire support, you might look at the accuracy of preplotted fires. You might relate measures of intermediate effectiveness to overall effectiveness, but the intermediate measures could be your primary criteria.

- BOS effectiveness: The feedback sources (such as the Take Home Package and AAR videos) provide detailed information about weaknesses and strengths of performance related to Battle Operating Systems (BOS).

Practical Exercise 3 gives you a chance to propose ways to increase the observability of an issue.

Practical Exercise 3: Revising Issue To Make It Observable

You are working on the following objective:

Examine the capabilities of J-series TO&E dismounted infantry.

Since the issue statement is not as objective as you would like before you plunge into data collection, you interview yourself:

You:	What kind of effect do you expect to see?
Yourself:	I think J will be better.
You:	Better than who?
Yourself:	Better than the H-series.
You:	How would you know they were better?
Yourself:	Hey, it's war, they would kill more bad guys and more of them would be alive.
You:	You know as well as I do that lots of things besides the infantry affects infantry. Would anything else make you believe they were better?
Yourself:	I bet they will be able to get a whole lot closer to the objective and bring more fire to bear.

Rewrite the issue so it reflects at least one of the indicators of effectiveness:

Rewrite the issue so it reflects at least one of the indicators of effectiveness: Examine the capabilities of J-series TO&E dismounted infantry.
Compare dismounted J-series dismounted infantry with H-series in terms of: (Choose one or more) • lethality and survivability • distance of elements from the objective • % of systems employed

The skills assessment for this module asks you to look at your issue statement critically. If you are not satisfied that it is specific, concise, and observable, rewrite it. The few minutes required to revise your issue statement will probably be the most effective use of your time throughout your research effort.

Access Data from Combat Analyst Workstation

Purpose: This module covers the procedures for getting information from the archive through computer applications. While the basic skills will help when you collect data in support of your issue, the immediate benefit is to help you plan your research. That benefit is achieved by demonstrating the types of information available through the computerized tools.

Resources:

- Combat Analyst Workstation

- Facilitators who will help with basic procedures with the tools.

- Subject Matter Experts who will answer questions about procedures at the CTCs.

- Publications related to specific tools
    TRACS Tutorial for NTC and JRTC Subsystems
    Catalog of NTC Mission Databases (Tab O in Workbook)
    User's Guide to BDA Database (Tab P in Workbook)
    Data File Documentation Volume XVII JRTC 90-1

Estimated Time To Complete: Six hours

Certification: You will compare printouts and other answers to a Feedback Sheet then show your results to a facilitator.

How To Proceed: The module covers seven tools and each tool has a Skills Assessment. You have the option of completing the Skills Assessments as you go or working through the full module then completing all the Skills Assessments.

Performance Objective: Using the Combat Analyst Workstation and required documentation, read, list, and print a report or extract data from the results of TRACS, Battle Replay, Mission Database, BDA Database, MTP Database, Automated Take-Home Package, and Digital Graphics.

Skills Assessments: The Skills Assessments for each tool are contained on the next eight pages. Read through the pertinent assessments before you work each segment.

December 6, 1992

Access Data from Combat Analyst Workstation

Skills Assessments

This section contains the requirements for showing you have acquired the skills covered in the module. Read through the skills assessments now, then put them aside while you work through the practical exercises. At the end of each section, or when you feel ready, complete the Skills Assessment.

TRACS

Define a data set of deliberate attack missions conducted by task forces at NTC with a METT-T effectiveness index greater than 50. For each mission, list the mission_id, %OPFOR destroyed, and the %BLUFOR survived in the table.

Mission_id	%OPFOR Destroyed	%BLUFOR Survived

Show your answers to one of the facilitators.

January 13, 1993

Battle Replay

Select Mission Replay at the Combat Analyst's Workstation and replay mission N898_M18. Based on that replay, answer the following questions.

1. Of the five E Co weapons systems that started the battle, which ones were killed or disabled before end of mission and when were they hit?

      E66
      E11
      E13
      E31
      E33

2. Mark the location(s) of the live E Co weapons systems at end of mission with a circle, or circles, on the map.

3. Mark the location of the task force commander at end of mission with a box on the map.
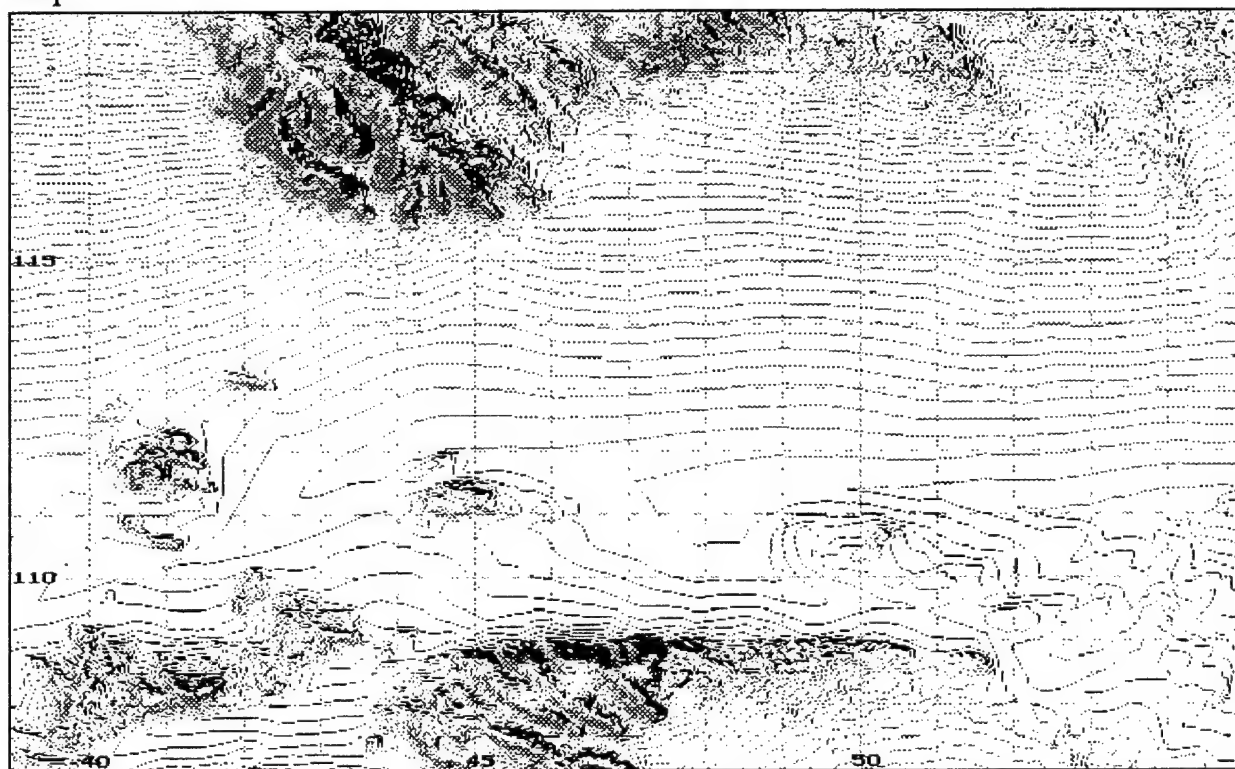
Show your answers to one of the facilitators.

January 13, 1993

Mission Database

Get a copy of the Mission Database Catalog and enter the Mission Database through the Combat Analyst Workstation.

Problem 1. You are studying fratricides at NTC. Write and execute an SQL statement that will tell you the time, the firer ID (bumper number), the firer logical player number (LPN), and the MILES code for fratricides during mission N903C_02. (All the required elements are in the PET Table.)

    a. HINT!! Don't forget to include "where frat='Y'" in your command!

    b. Save your SQL statement and output with the following filename:

        "initials1.MDB" (substitute your own initials)

    c. You will print and retrieve the file after you finish problem 2.

    d. Blank your screen and go on to problem 2.

Problem 2. You are studying communication at NTC. Write and execute an SQL statement that will produce, for mission N903C_02, a list of the time, the PID (Player ID), the LPN (logical player number), the net and duration of communication events, only for net 1, and ordered by the duration of the commo events.

    a. Save your SQL statement with the following filename:

        "initials2.MDB" (substitute your own initials)

    b. Blank your screen and exit the mission database.

Problem 3. Now print the files you created in problems 1 and 2, and retrieve both printouts.

Show your answers to one of the facilitators.

January 13, 1993

BDA Database

Get a copy of the <u>User's Guide to the BDA Database</u> and enter the BDA Database through the Combat Analyst Workstation.

Problem 1. You are studying the effectiveness of attack helicopters. Write and execute an SQL statement that will tell you the missions where a BLUFOR attack helicopter killed an OPFOR ZSU-23-4. (All the information you need is in the BDA Table.)

      a. Save your SQL statement and the output in a file called,

            "initials.BDA" (substitute your own initials)

      b. Blank your screen and exit the BDA Database.

Problem 2. Print the file and retrieve your printout.

Show your answers to one of the facilitators.

January 13, 1993

MTP Database

Get a copy of the Index of T&EO Tasks and the MTP Database Description. Enter the MTP Database through the Combat Analyst Workstation.

Problem 1. You are studying consolidation and reorganization at the task force level (ctc_task = '21'). Write and execute an SQL statement for the MTP Database that will tell you the phase, CTC task, unit identification code, specific element rated, CTC identification, rotation and evaluation date for each time the task was rated as Needs Practice (ctsk_eval= '2'). Use the RES Table.

   a. Save your SQL statement and the results of its execution in a file called,

   "initials.MTP" (substitute your own initials).

   b. Blank your screen and exit the MTP Database.

Problem 2. Print the file and retrieve your printout.

Show your answers to one of the facilitators.

January 13, 1993

Automated Take-Home Package

You are studying the impact of decision support templates (DST) on battles at NTC. Comments on the DST are usually found under the Intelligence BOS (since it is based on analysis done by the S2); comments about the DST are also frequently made under Command and Control. One of the units you are studying is the Armor task force in NTC Rotation 901. Work with the automated THP to answer the following questions:

1. How many times is the DST mentioned in the Mission Performance file for the Intelligence BOS? _____

2. According to comments under the Command and Control BOS, how much impact did the DST have on Mission 1, Defense in Sector?

Exit the Automated THP and the Analyst Workstation Menu.

Show your answers to one of the facilitators.

January 13, 1993

Graphics Database

Retrieve N927_M13.OP1 Operations Plan (actually the TF Operations Overlay) and the Execution Matrix for mission N927_M13.

Increase the contrast on the OPLAN and print it (full page).

Decrease the contrast and lighten the over-all image for the Execution Matrix and print it (full page).

Show the copies of the two graphics to one of the facilitators.

January 13, 1993

Access Data from the Combat Analyst Workstation

Overview

This module covers the tools available through the Combat Analyst Workstation. We will cover the basic operations for seven tools:

• TRACS: This is a catalog system that describes characteristics of missions and lists data available for the missions.

• Battle Replay: This is a playback on your monitor that shows the events in a battle.

• Mission Database: This tool gives you access to instrumented data collected for CTC battles.

• BDA Database: This tool lets you extract information on battle damage assessment that was compiled by Observer/Controllers (OCs).

• MTP Database: This database contains task ratings by OCs.

• Automated THP: This is an alternative form of the paper Take Home Packages produced for each rotation.

• Digital Graphics: This is an alternative form of the paper Operations Orders (OPORDs) and overlays.

Each tool is covered by a segment. Each segment has at least one practical exercise where you work with the tool. There is also a skills assessment for each tool. You may work either through the skills assessments as you go or complete all skills assessments after you have worked with all the tools.

TRACS

The Training Research Automated Catalog system (TRACS) is an automated reference system for the archive. It will help you select missions that pertain to your issue and direct you to sources of information about each mission. Besides being a useful research tool, TRACS gives you a valuable overview of the types of information available from each CTC. This segment covers the procedures for logging onto the mini-computer that contains TRACS and a tutorial for gaining access to data from NTC and JRTC.

Logging on to the mini-computer

TRACS is one of several tools that are housed on computers separate from your workstation. In this case the computer is the VAX. The procedure to gain access to the VAX is shown below:

- Enter the POM Archives:
    Double click (press the left button on the mouse twice quickly) on *POM Archives*.

- You should now be at the Analyst Workstation Menu. (If you aren't, you probably did not click fast enough.) From the Analyst Workstation Menu, select Initiate TRACS:
    Type: *6, Enter*

Procedures for accessing data with TRACS

P.E.: Complete TRACS Tutorial

Get the TRACS tutorial from the reference area and work through the procedures.

Procedures to return to menu

When you finish an application through the VAX, you need to return to the workstation. The procedure is shown below:

- Select Quit the Menu:
    Type: *8, Enter*

- You should now be at the initial menu. There is probably a black Services window in the right corner. Every time you get that window, close it:
    Double click on the minus (-) in the left corner of the window frame.
    If you get the sub-menu, you were not quick enough. Click on *Close*.

The Skills Assessment for this segment asks you to define a set of missions at NTC that exhibit certain characteristics and extract simple data for those missions.

One of the major advances in the archive tools in the last year has been the development of ways to replay CTC battles. Such replays are valuable for selecting examples of good combat performance and are a good medium to demonstrate the effects of procedures at the CTC.

Since replays are based on digital data, they are limited to NTC rotations, specifically force-on-force battles at NTC. Two tools that are available at your work station are involved in the replay--the Battle Trace and the Battle Replay. The three practical exercises in this section cover the procedures to use these tools to gather information about one mission:

- Display the footprint of the battle using the Battle Trace.
- Display battle events using the Battle Replay.
- Examine the role of specific players using the Battle Replay.

Displaying the footprint of the battle using the Battle Trace

The first practical exercise shows you how to load files and use the Battle Trace. The Battle Footprint is valuable when you study movement techniques and elements of tactics such as mass.

P.E. 1: Displaying the Battle Footprint

For this exercise work with mission N89A_M12. (A mission at NTC, during rotation 8910, conducted by a Mechanized Task Force, on the 12th day of the month).	

Download the file.	• Double click on *Retrieve Replay Files*.
	 • The next screen has sections for Year, Rotation, and Mission. Single click on the following:
	     Year: *1989*
	     Rotation: *10 (A)*
	     Mission: *89A_M12 Deliberate Attack*
	 • Click on *Download*.

Define a map area.	• When the blue screen finally clears, you will be back at the basic menu. A Services window will be shown in the upper right of the menu. Close the window by double clicking on the minus in the left corner (or single click on the minus and on *close*). • Double click on *Mission Replay*. • Select N89A_M12 . Type the number corresponding to the mission, *Enter*. • If you are the first person to work with a mission at your Workstation, you will get a display of a large area of the NTC terrain. If someone has worked with the mission, you will be asked if you want an existing map area. Type *N* to define the area yourself. • The battle will be replayed in a small area of the terrain display. After the replay is over, use the mouse to move the curser (in this case a tank) to the lower left corner of the area you want to see (that is <u>not</u> the left corner of the screen). When you have the curser in the correct spot, press the left button on the mouse. This will mark a 15 x 12 KM box that will be shown in greater detail. If the box does not include the part of the battle you want to watch, select *N* and reposition the curser. Once the box includes the area you want, select *Y*.
Enter Battle Trace through the menu.	Select battle trace (BTrace) by typing *T*.
Watch the replay.	• Obstacles are represented by a series of green shapes. • The vehicles in the task force are represented by blue markers and the OPFOR by red markers. Each shift in position represents five minutes. Bright markers show positions as of the time in the upper left corner; dull markers show previous positions. • Rectangles will sometimes flash on the screen. These represent indirect fire.

Displaying battle events using the Battle Replay

The Battle Replay lets you control the players that are displayed. ("Players" are vehicles or selected dismounted elements.) This feature lets you focus on particular

units to see their contribution to the battle. The basic operation is demonstrated in Practical Exercise 2.

P.E. 2: Displaying Selected Units with Battle Replay

Enter Battle Replay through the menu.	• If you are still in Battle Trace, press any key. • Select battle replay (Part) by typing P.
Select units to be displayed.	• Do not display the template: type N. • Display the red players (OPFOR): type Y. • Select the line companies and their leaders by pressing Y at each prompt until you have the five companies. In this case two of the companies (Ax and Bx) are cross-attached from the Armor Bn. • Do not select other players: type N.
Watch the replay.	You control the movement in battle replay by pressing the space bar (one five minute segment) or number keys for several segments (9 gives you 45 minutes of movement).
Check on casualties.	• Check on casualties by pressing F1. For example, press F1 at the end of mission. Note that at 0631 the instrumented system had recorded a kill of the OPFOR. • Return to the replay by pressing any key.

Answer a question to prove you are paying attention.

After you have played through the mission, go back to the menu (any key; N) and make the selections to answer:

What was the final position of E Co (Antiarmor) vehicles that crossed the obstacle belt? Mark the position on the map.
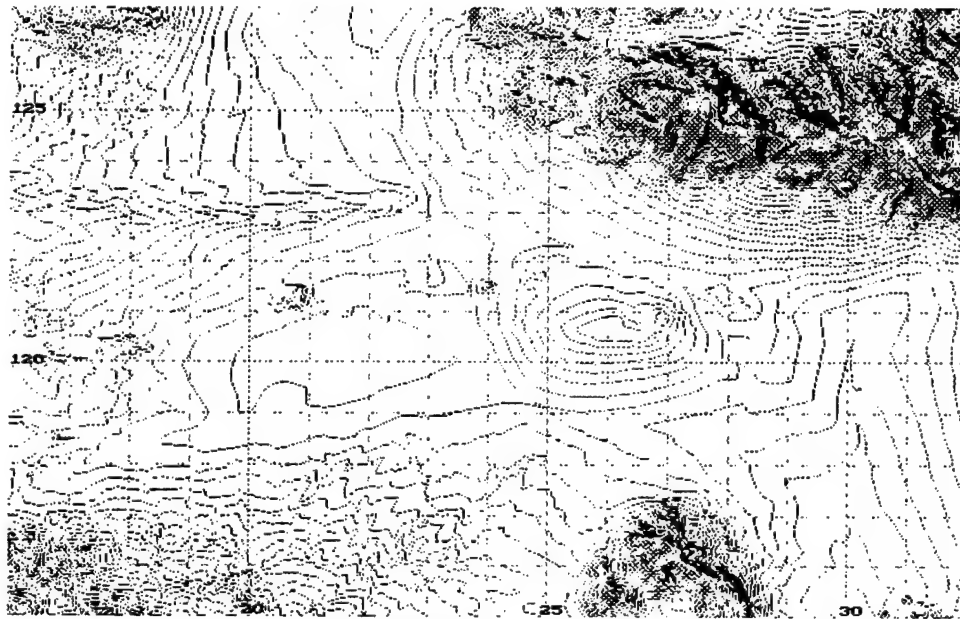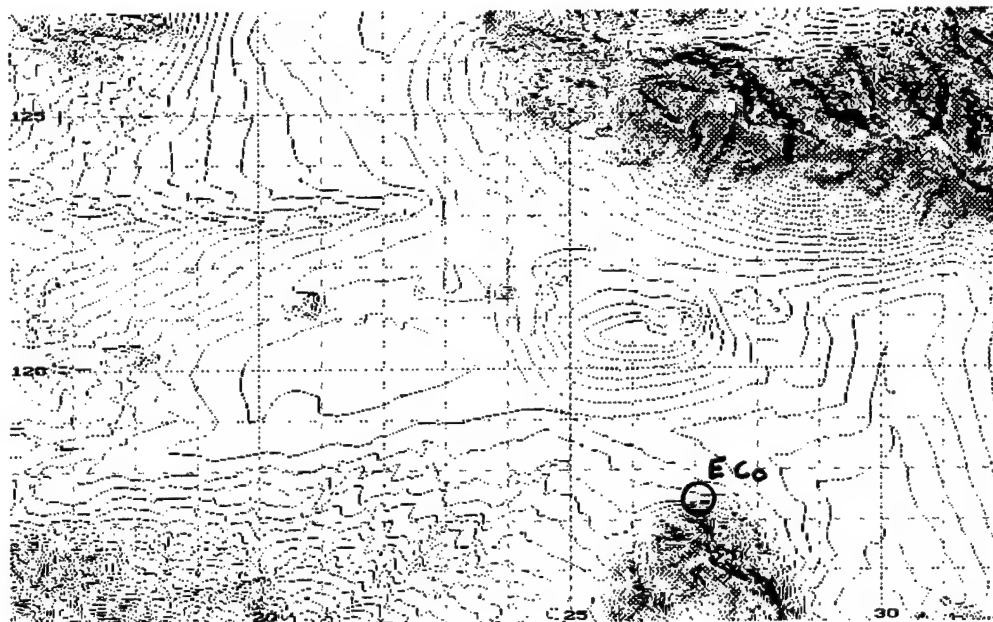
The easiest way to answer this question is to select only E Co when you select the units to be displayed and watch where they went.

Examining the role of specific players using the Battle Replay

Analysts are sometimes concerned with individual players at levels other than line companies, for example scouts, the TOC, or commanders. The next practical exercise shows how to focus on such players in Battle Replay.

P.E. 3: Focussing on Specific Players

Reenter Battle Replay and select units.	Select the armor companies (Ax and Bx) and their leaders.

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Select additional players.

After you select the line companies, a prompt asks if you want other players. You can add any of the elements listed at the bottom of the screen or company commanders of line companies you did not select. (If you do not see any elements at the bottom of your screen, adjust the contrast on your monitor.) You make those selections by typing Y when you are asked if you want additional elements and entering the three character code for the element. Select the task force commander (*CDR*), the S3 (*S3**) and the scouts (*H***).

Identify specific players.

• Press *F2*. A small wagon wheel will appear on the screen. If you cannot find it, move your mouse around.
• Move the wheel with your mouse to the marker you are interested in. For example, move the wheel to the vehicle symbol at the south end of the obstacle belt at the start of the mission and depress the left button on the mouse. H26 (one of the scout vehicles) will be listed at the top of the screen.
• Press the space bar to clear the message bar. If more than one player is at the location, pressing the space bar will display each of them.
• Return to the replay by pressing *Esc*.

Answer two questions.
1. Who was at point X at the start of the mission?

2. Where was the task force commander at the end of the mission? (Mark with a circle.)
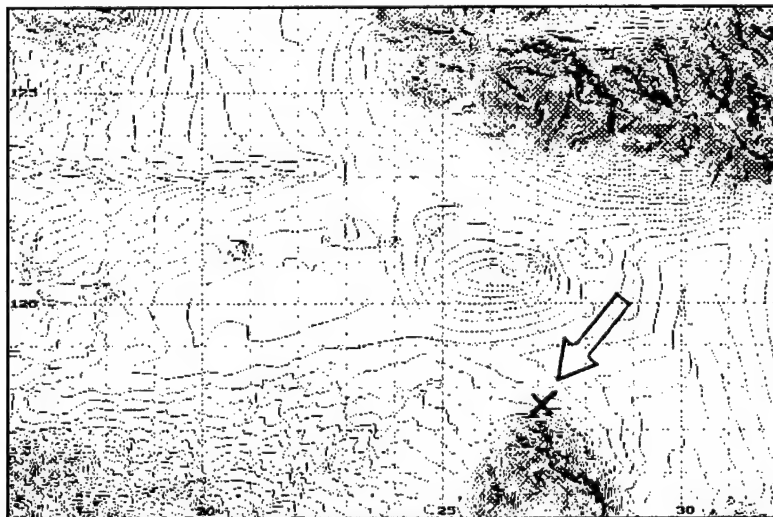
1. Who was at point X at the start of the mission?

The S3.

2. Where was the task force commander at the end of the mission? (Mark with a circle.)
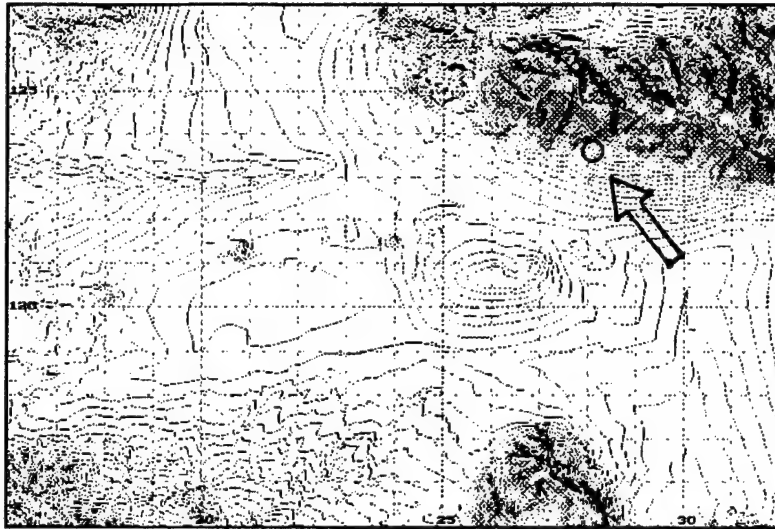
The skills assessment for this segment asks you to perform the steps in P.E. 2 and 3 for a different mission. If you are comfortable with those steps, do the skills assessment. If you still have questions, ask one of your colleagues who has finished this segment or one of the facilitators.

A great deal of information about each battle at NTC is collected through the Core Instrumentation Subsystem (CIS) and the Range Data Measurement Subsystem (RDMS). This information is generally called "digital data." When other CTCs implement similar systems to capture digital data, they will be added to the archive.

The data from the Mission Database is valuable when you study specific battles. For example you can get a record of each firing event (trigger pulls), communication events, and position at the time of each event and every five minutes. You need to remember, however, that NTC is a big area and some data are not captured. For example, only about 10% of the casualties are matched pairings (the firer and the casualty were known). Even with the gaps in the data, the Mission Database is a rich source of detail about each mission. This segment covers four procedures for getting that information:

- Extracting information from the Catalog.
- Gaining access to the automated mission database, and selecting and listing data elements from one of the data tables.
- Selecting records based on conditions.
- Controlling the output order of records.

Extracting information from the Catalog

When you work with the Mission Database, you should have a copy of the Catalog of NTC Mission Databases; you will be using Appendix A only. The function of the Appendix is to illustrate the structure of each of the various tables that comprise the Mission Database, and to provide the user with sample output from each table.

Basically there are two types of tables in the Mission database: event tables and static tables. Events are those data that occurred in the field of play, such as a main gun round being fired. Think of them as "what's going on" during a training mission. Static data defines the condition of the field and players during a training mission. Think of static data as "what it looks like."

A good rule of thumb for recognizing an 'event' table is the presence of a time variable. In our database, the following tables have a time stamp with each event:

1) Mission Identification Table   (MID)
2) Fire Event Table   (FET)
3) Pairing Event Table   (PET)
4) Indirect Fire Missions Fired   (IFMF)
5) Indirect Fire Casualties Table   (IFCT)
6) Minefield Casualties Table   (MCT)

7) Communications Table	(CT)
8) Ground Player Location Table	(GPLT)
9) Air Player Location Table	(APLT)
10) Player State Update Table	(PSUT)
11) Unit State Update Table	(USUT)
12) Control Measure	(CM)

All of the above tables can be linked logically by their time variable, and can give us a chronological view of the training exercise.

Static tables support the event tables. They contain the condition and or state of the troops at the start of the training exercise. The following is a list of the database's static tables:

1) Player State Initialization Table	(PSIT)
2) Unit State Initialization Table	(USIT)
3) Unit Type Table	(UTT)
4) Player Vehicle Weapon Table	(PVWT)
5) Indirect Fire Target Table	(IFTT)
6) Indirect Fire Group Table	(IFGT)
7) Control Measure Table	(CMT)

These tables help give the researcher an idea of the physical condition of the players and the battlefield during the training mission. Practical Exercise #1 demonstrates the tables, data elements, and values to be found in those elements.

Practical Exercise #1: Extract data from the Catalog of NTC Mission Databases

Use the <u>Catalog of NTC Mission Databases</u> to do the following:

>Familiarize yourself with the numerous tables that comprise the Mission Database.

>Notice the data elements that comprise each table. (For example, look at page A-5, which shows the Unit Type Table (short title name, "UTT"). It contains four data elements: "utype," "side," "echelon," and "desc."

>Notice the various values that appear within the data elements. (For example, look at page A-5, which shows the Unit Type Table (UTT). One of the data elements is called, "echelon." There are six different values which may appear in the "echelon" data element: "Plt", "Co", "Bn", "Bde", "Div", or "Reg".

Use the Catalog to answer the following questions.

1. Write down the short title name of each table in the Mission Database that contains the data element "miles" (which is the MILES Weapon Code).

_____   _____

_____   _____

2. Write down the possible data values in the "result" data element which is found in the Pairing Event Table (PET).

_____   _____   _____

3. Write down all possible data values for the "side" data element which is found is numerous tables.

_____   _____   _____

Check your answers with the answer sheet on the next page.

1. PVWT (Player Vehicle Weapon Table)
    FET (Firing Event Table)
    PET (Pairing Event Table)
    IFMF (IFCAS Missions Fired Table)

2. N, H, K

3. B, O, W

<u>Practical Exercise #2: Gain access to the Mission Database;</u>
<u>select and list data elements from one of the data tables.</u>

Any of the mission databases from 1989 or 1990 may be accessed, but during the remainder of the practical exercises in this module, you will use mission database N903C_02. You will be selecting data elements from various tables for mission database N903C_02, by using INGRES and Interactive Standard Query Language (ISQL) command statements composed of command words, data element names, and table names.

>Go to a computer workstation, and log-on to the VAX. Select "Access POM Archives" from the "CTC Archive Access" window by placing the arrow on top of the icon that says "Access POM Archives" and then clicking twice quickly. Use SQL to access data in mission database N903C_02 by doing the following:

1. Select "Query NTC 90 Mission Database" by typing *4* and then pushing the *<enter>* key.

2. Select mission database N903C_02 by typing *n903c_02* (small letters "n" and "c" not capital letters) and then pushing the *<enter>* key.

After a few seconds, you will be in the SQL mode, and ready to create an SQL command statement.

Now refer to the MID (Mission Identification Table) in the Catalog, and look at the element names (data elements). Your objective is to view the values in data elements "start_time", "end_time", "mtype", "msubtype", and "dbname". What follows is the SQL command statement you must type and execute in order to accomplish that objective.

Enter the following:

select start_time,
  end_time,
  mtype,
  msubtype,
  dbname
from mid

(Note: When typing command statements, please type exactly what is shown, including commas, spaces, small letters, capital letters, etc.; otherwise you will get an error message instead of the data you have requested.)

Execute the command. (Press the *[F5]* key; or *[F1]*; *G(o);<enter>*.)

Now look through the data that has just been output. As you can see, your output consists of the data elements you selected (start_time, end_time, mtype, msubtype, dbname), from the Mission Identification Table (mid), and the various values within each data element for mission N903C_02; one of the values for the data element "msubtype" is "Mvmt/Mnvr"; another value for that same data element is "Ctr-Recon"; another is "Objective". Notice that the only value for the data element "mtype" is "Defend". This is because you are looking at data for mission database "N903C_02" which was a defend mission. If you had selected a mission which was a "Search and Attack and Security" mission, the only value which would appear in data element "mtype" is "Search and Attack and Security". You will also notice that the only value for data element "dbname" is "N903C_02". That's because you selected that mission database to work with when you began your session.

Now erase your output only. (Press the *[F3]* key; or *[F1]*; E(nd); *<enter>*.)
This command would have the same result when executed, if typed as follows:

      select start_time,end_time,mtype,msubtype,dbname from mid

No difference, except it is easier to read the other way. What <u>is</u> important, is that you put the commas in the right place. There are commas separating each data element (i.e., start_time,end_time, etc.), but there is no comma after the last element - "dbname". If you had put a comma after "dbname" you would have gotten an error message. To illustrate this point, do the following.

First blank your screen. (Press the *<shift>F4* key; or *[F1]*; B(lank); *<enter>*.)

Enter the following exactly:

      select start_time,end_time,mtype,msubtype,dbname, from mid

Execute the command. (Press the *[F5]* key; or *[F1]*; G(o); *<enter>*.)

Look at your screen and read the output.

Now you know what an error message looks like. It is important that you put every comma in the right place, and that you do not put a comma where there should be no comma. If at any time during these exercises, you get an error message, check your command statement closely for improper use of commas.

Erase your output (the error message). (Press the *[F3]* key; or *[F1]*; E(nd); *<enter>*.)

Now edit the command so that it is correct; take out the comma after "dbname" by using the left and right arrow keys and replacing the comma with a space, or by backspacing over the comma. When finished, your command should look like this:

select start_time,end_time,mtype,msubtype,dbname from mid

Execute the command. (Press the *[F5]* key; or *[F1]*; *G*(o); *<enter>*.)

This time, you should have gotten the data you selected rather than an error message.

Compare your output to the answer sheet on the next page.

```
1) /###############################################/
2) /# OUTPUT FOR MISSION DATABASE PRACTICAL EXERCISE #2     #/
3) /###############################################/
4) SELECT START_TIME,
5) END_TIME,
6) MTYPE,
7) MSUBTYPE,
8) DBNAME
9) FROM MID
```

\START_TIME	\END_TIME	\MTYPE	\MSUBTYPE	\DBNAME	\
\ 01-DEC-89 17:02:12	\ 01-DEC-89 13:54:16	\DEFEND	\CTR-RECON	\N903C_02	\
\ 01-DEC-89 20:03:21	\ 02-DEC-89 02:06:31	\DEFEND	\CTR-RECON	\N903C_02	\
\ 02-DEC-89 03:19:53	\ 02-DEC-89 05:15:15	\DEFEND	\CTR-RECON	\N903C_02	\
\ 02-DEC-89 05:14:51	\ 02-DEC-89 06:00:00	\DEFEND	\CTR-RECON	\N903C_02	\
\ 02-DEC-89 06:00:00	\ 02-DEC-89 06:40:00	\DEFEND	\MVMT/MNVR	\N903C_02	\
\ 02-DEC-89 06:40:01	\ 02-DEC-89 02:15:00	\DEFEND	\OBJECTIVE	\N903C_02	\

```
(6 ROWS)
END OF REQUEST
```

If your output does not match the answer sheet, ask a proctor for help.

If your output matches the answer sheet, save your SQL command statement and the results (the data output) in a file so that you can print them later.

To do this, you must "write" what you have created to a "file" and give that file a name.

Press the *[F1]* key to return to the command line.

Press the *F*(ile) key; then press the *<enter>* key.

Press the *W*(rite) key; then press the *<enter>* key.

Enter a filename as follows:

> *initials2.mdb* (substitute your own initials, i.e.,
> JS2.mdb = John Smith, Practical Exercise #2, Mission Database).

When you are satisfied that you have typed the filename correctly,
press the *<enter>* key.

Your file will be saved in your user area with the same name; you will print the file later, after you have completed the mission database portion of this module. You will be given instructions on how to print this file (and others you will be creating) at that time.

Erase your output. (Press *[F3]*; or *[F1]*; *E*(nd); *<enter>*.)

Blank your screen completely. (Press *<shift>F4*; or *[F1]*; *B*lank); *<enter>*.)

Now move to the next practical exercise.

In this exercise, you will do something similar to what you did in the first exercise, except you are going to query the Database for different data elements, and you are going to get the data elements from a different table. The same command words will be used: "select" and "from" <u>AND!</u> you're going to learn a couple of new words: "where" and "and."   These words allow you to select records based on more than one condition in the data.

(Remember to type the command statement exactly as shown. Don't forget to use capital letters where shown.)

Type the following:

```
select pid,
  lpn,
  side,
  inst,
  active,
  ptype,
  org,
  track,
  pstat
from psit
where side='B'
and inst='I'
and track='T'
and pstat=2
```

Execute the command. (Press the *[F5]* key; or *[F1]*; *G*(o); *<enter>*.)

Use the down arrow to look through the output on your screen. Check the output on your screen with the output shown on the next page.

```
 1) /***********************************************************/
 2) /* OUTPUT -- MISSION DATABASE PRACTICAL EXERCISE #3     */
 3) /***********************************************************/
 4) SELECT PID,
 5) LPN,
 6) SIDE,
 7) INST,
 8) ACTIVE,
 9) PTYPE,
10) ORG;
11) TRACK,
12) PSTAT
13) FROM PSIT
14) WHERE SIDE='B'
15) AND INST='I'
16) AND TRACK='T'
17) AND PSTAT=2
```

PID	LPN	SIDE	INST	ACTIVE	PTYPE	ORG	TRACK	PSTAT
EV1	321	B	I		0	2\C2T/1-008	T	2
EV4	324	B	I		0	2\C2T/1-008	T	2
60A	339	B	I		0	29\A/1-008	T	2
13A	344	B	I		0	29\1/A/1-008	T	2
32A	351	B	I		0	29\3/A/1-008	T	2
B11	357	B	I		0	1\1/B/1-008	T	2
B12	358	B	I		0	1\1/B/1-008	T	2
B32	366	B	I		0	1\3/B/1-008	T	2
C50	370	B	I		0	1\C/1-008	T	2
C13	374	B	I		0	1\1/C/1-008	T	2
C14	375	B	I		0	1\1/C/1-008	T	2
C21	376	B	I		0	1\2/C/1-008	T	2
C31	380	B	I		0	1\3/C/1-008	T	2
D22	392	B	I		0	1\2/D/1-008	T	2
D23	393	B	I		0	1\2/D/1-008	T	2

When you have finished checking your output, closely examine the following:

1) Your SQL command statement,
2) The table called "PSIT" (Player State Initialization Table) in the catalog,
3) The elements which are found in the PSIT table,
4) The different values which may appear in those elements,
5) Your output.

Write below what information (data) your SQL command statement was seeking.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer sheet is on the next page.

The command statement looks for data in the PSIT.

The command statement asks for the following information:

pid which is the player identification number (bumper number)

lpn which is the logical player number

side BUT! only when side = B, which means that the command asks only for records in the table dealing with the BLUFOR, not the OPFOR (side = O) or the O/C's (side = W)

inst BUT! only when inst = I, which means that the command asks only for records in the table dealing with players who are instrumented, not for players who are not instrumented (inst = N)

active which shows whether players were active, not active or undetermined.

ptype which is player type code

org which is next higher line unit

track BUT! only when track = T, which means that the command asks only for records in the table dealing with players who are tracked by the RDMS, not for players who are untracked (track = U)

pstat which is player status code BUT! only when pstat = 2, which means that the command asks only for records in the table dealing with players who were combat losses (pstat = 2), not for players who maintained any other status code (1, 3, 4, 5, 6 or 7).

Now focus your attention on the part of the command that looks like this:

```
where side  =  'B'
and    inst  =  'I'
and    track =  'T'
and    pstat =  2
```

Notice anything peculiar? The number 2 does not have single apostrophes around it, but everything else does - the 'B' does, the 'I' does, the 'T' does, but the 2 does not. That's because in the database, "side" and "inst" and "track" are data elements that have been defined as "character" data elements; but the "pstat" data element has been defined as an "integer" data element. If you look at the PSIT table in the catalog, you will find a column called, "Units". There you will find how each data element has been defined. If the data element has been defined as a character element, you must use the single apostrophes around a data value when you use it in a command statement; if the data element has been defined as an integer element, you must <u>not</u> use the single apostrophes. Remember to follow this "rule" when creating your command statements or you may not get the output which you intended to get.

Another feature of character data elements is that the data values in them are capitalized. So the data value that you ask for when you type your command statement must also be capitalized. If your command asked for records only where side = 'b', you would not get any data in your output, because all the values in the "side" data element are capitalized in the database (capital 'O' for OPFOR side, capital 'B' for BLUFOR side, and capital 'W' for O/Cs).

Erase your output. (Press the *[F3]* key; or *[F1]*; E(nd); *<enter>*.)

Blank your screen. (Press *<shift>F4*; or *[F1]*; B(lank); *<enter>*.)

Go to the next practical exercise.

Practical Exercise #4: Control the output order of records.

This exercise calls for selecting data elements from one table, and then ordering the output based on the values in two of the selected data elements.

Enter the following:

```
select side,
  ptype,
  vehicle,
  miles,
  weapon,
  iammo
from pvwt
```

Execute the command. (Press the *[F5]* key; or *[F1]*; G(o); *<enter>*.)

Use the down arrow or *PageDown* key to scroll through the output and notice how the selected data are displayed; the O/C (side=W) and the OPFOR (side=O) and the Blufor (side=B) records are not grouped together, and the player type codes (0-29) are not displayed in numerical order within each group. That is because the order in which the records have been output is the same as the order in which the records have been input (physically ordered within the table).

Erase your output. (Press the *[F3]* key; or *[F1]*; E(nd); *<enter>*.)

Edit your command; add one line to the bottom so that your command reads as follows:

```
select side,
  ptype,
  vehicle,
  miles,
  weapon,
  iammo,
from pvwt
order by side,ptype
```

The "order by" command allows you to change the output order of your selected records.

Execute the command. (Press the *[F5]* key; or *[F1]*; G(o); *<enter>*.)

Use the down arrow or *PageDown* key to scroll through the output and notice how the output records are now ordered; BLUFOR "side" records first, then OPFOR "side" records, then O/C "side" records. Also notice that the values in the "ptype" element (player type codes) are now ordered lowest to highest within each of the three "side" element values: "B" ("0" to "29"), "O" ("0" to "27"), and then "W" ("0" to "2").

Compare your output to the answer sheet on the next page. If your output does not match the answer sheet, ask a proctor for help.

```
 1> /********************************************************/
 2> /* OUTPUT FOR MISSION DATABASE PRACTICAL EXERCISE #4     */
 3> /********************************************************/
 4> SELECT SIDE,
 5> PTYPE,
 6> VEHICLE,
 7> MILES,
 8> WEAPON,
 9> IAMMO
10> FROM PVWT
11> ORDER BY SIDE,PTYPE
```

\SIDE	\PTYPE	\VEHICLE	\MILES	\WEAPON	\IAMMO \
\B	\	0\UNDEFINED	\	0\UNKNOWN	\	0\
\B	\	1\M60 A1/A3 TANK	\	28\105MM (MISS)	\	0\
\B	\	1\M60 A1/A3 TANK	\	12\105MM MAIN GUN	\	0\
\B	\	1\ABRAMS	\	16\120MM MAIN GUN	\	0\
\B	\	1\M60 A1/A3 TANK	\	27\COAX	\	0\
\B	\	1\M60 A1/A3 TANK	\	29\COAX (MISS)	\	0\
\B	\	2\APC	\	29\M2 (MISS)	\	0\
\B	\	2\APC	\	24\M2 MACHINE GUN	\	0\
\B	\	3\APC	\	7\TOW	\	0\
\B	\	3\APC	\	31\TOW (MISS)	\	0\
\B	\	4\MANPACK	\	0\NON WEAPON	\	0\
\B	\	5\MANPACK	\	15\VIPER	\	0\
\B	\	5\MANPACK	\	28\VIPER (MISS)	\	0\
\B	\	6\MANPACK	\	8\DRAGON	\	0\
\B	\	7\MANPACK	\	29\M-16 (MISS)	\	0\

If your output matches the answer sheet, save your SQL command statement and the results (the data output) in a file so that you can print them later.

To do this, you must "write" what you have created to a "file" and give that file a name.

Press the *[F1]* key to return to the command line.

Press the *F(ile)* key; then press the *<enter>* key.

Press the *W(rite)* key; then press the *<enter>* key.

Enter a filename as follows:

> *initials4.mdb* (substitute your own initials, i.e.,
> JS4.mdb = John Smith, Practical Exercise #4, Mission Database).

When you are satisfied that you have typed the filename correctly, press the *<enter>* key.

Your file will be saved in your user area with the same name; you will print the file later, after you have completed the mission database portion of this module. You will be given instructions on how to print this file (and others you will be creating) at that time.

After you have compared your output and saved your file, erase your output first. (Press *[F3]*; or *[F1]*; *E(nd)*; *<enter>*.)

Blank your screen completely. (Press *<shift>F4*; or *[F1]*; *B(lank)*; *<enter>*.)

Exit (or quit) your session in SQL. (Press *[F1]*; *Q(uit)*; *<enter>*.)

Go to the next page.

PRINT YOUR FILES:

You will now print the two files which you saved during practical exercise numbers 2 and 4.

1. Select "Manipulate Files" by typing 7; then press *<enter>*.

2. Select "Print Files" by typing 3; then press *<enter>*. The files you created during the practical exercises are highlighted on the screen.

3. Enter the name of the file you saved in practical exercise #2: *Your initials2.mdb*.

4. After you enter the name of the file you want to print press *<enter>*.

The file will print on the high speed printer and the printout will have your user number on the first page. Make sure you do not take someone else's printout.

5. Select "Print Files" by typing 3; then press *<enter>*. The files you created during the practical exercises are highlighted on the screen.

6. Enter the name of the file you saved in practical exercise #4: *Your initials4.mdb*.

7. After you enter the name of the file you want to print press *<enter>*.

The file will print on the high speed printer and the printout will have your user number on the first page. Make sure you do not take someone else's printout.

8. Retrieve both printouts from the printer, and have them checked by a proctor.

9. Select "Return to Main Menu" by typing 7; then press *<enter>*.

You have covered a lot of ground in this segment. The intent was to give you the basic skills for working in the INGRES environment in general and the Mission Database in particular. The materials have covered working with one table at a time. The skills assessment which follows also involves using only one table. For exercises involving the use of two or more tables simultaneously, we recommend that you work through the exercises in the User's Guide to the ARI-NTC Mission Databases (Rev 31 Jan 91), Tab G, paragraphs 4.1 through 4.8.

Proceed to the Skills Assessment for the Mission Database. When you have finished the skills assessment, begin the BDA Database segment of the instruction.

BDA Database

A large number of research issues have concerned the lethality and survivability of weapons systems at the CTCs; for example, what does a tank kill and what kills a tank? The Battle Damage Assessment (BDA) Database can be used to answer such questions. This section covers four procedures for extracting information from the BDA Database:

- Extracting data from the User's Guide to the BDA Database
- Extracting data from the BDA Table
- Extracting data from the Target and Weapon Tables independently
- Extracting data from the BDA, Target, and Weapons Tables at the same time

The data from all three CTCs are stored in just two tables, the BDA table (which reports losses of targets to specific weapon systems) and the Initial Strength table (which reports the number of vehicles starting and the number lost during the training exercise). In addition to these two tables there are two parameter tables, the Weapon table and the Target table; they contain the descriptions of the different systems in use at the respective CTCs.

Practical Exercise #1: Extract data from the User's Guide.

This exercise calls for you to familiarize yourself with the structure and content of the Battle Damage Assessment (BDA) Database by referring to the User's Guide To the Battle Damage Assessment (BDA) Database, Appendix A. The appendix describes the BDA Database table types and the format and definition of each table. The BDA Database is organized by training mission.

>Familiarize yourself with the 4 tables that comprise the BDA Database, the data elements that comprise each table, and the possible values in each data element.

Write your answers to the questions below.

1. If data element "weapon_type" in the BDA Table contains the value "15", and data element "weapon_side" in the same table contains the value "B", write down the possible value(s) of the data element "weapon_description" in the Weapon Table.

_____

2. If data element "target_type" in the Initial Strength Table contains the value "8", write down the possible value(s) of the data element "target_description" in the Target Table.

_____

_____

3. If data element "weapon description" in the Weapon Table contains the value "Mines", and data element "weapon type" in the BDA Table contains the value "11", write down the possible value(s) of the data element "weapon_side" in the Weapon Table.

_____

Check your answers with the answer sheet on the next page.

1. Stinger

2. 60mm Mortar   (If side = 'B')
   Aviation   (If side = 'O')

3. O

Practical Exercise #2: Extract data from the BDA Table

The procedures used in Practical Exercise #2 build on the skills you developed working with the Mission Database.

In this exercise you will be asked to go into the BDA Database using INGRES and SQL command statements designed to extract information in various data elements from the BDA Table, based on a given condition. The focus of this exercise, is on understanding the structure and relations of the table data by focusing on the values that are output for each data element selected.

>Go to a computer workstation, and log-on to the VAX. Select "Access POM Archives" from the "CTC Archive Access" window by placing the arrow on top of the icon that says "Access POM Archives" and then clicking twice quickly. Use SQL to access the BDA Database by doing the following:

1. Select "Query BDA Database" by typing *1* and then pushing the *<enter>* key.

After a few seconds, you will be in the SQL mode and ready to access the BDA Database Any mission which exists in the database may be accessed, but to make this series of exercises meaningful, you will work exclusively with one mission: mission_id "N901_V26."

Enter the following:

```
select mission_id,
  weapon_type,
  weapon_side,
  target_type,
  target_side,
  lost
from bda
where mission_id='N901_V26'
```

Execute the command. (Press the *[F5]* key; or *[F1]*; G(o); *<enter>*.)

Compare your statement and output with the answer sheet found on the next page. If your output does not match what's on the answer sheet, ask a colleague for help.

```
 1) /*****************************************************/
 2) /* OUTPUT FOR SDA DATABASE PRACTICAL EXERCISE #2   */
 3) /*****************************************************/
 4) SELECT MISSION_ID,
 5) WEAPON_TYPE,
 6) WEAPON_SIDE,
 7) TARGET_TYPE,
 8) TARGET_SIDE,
 9) LOST
10) FROM SDA
11) WHERE MISSION_ID='N901_V26'
```

MISSION_ID	WEAPON	WEAPON	TARGET	TARGET	LOST
N901_V26	1	B	1	O	4
N901_V26	1	B	2	O	4
N901_V26	1	B	3	O	1
N901_V26	2	B	1	O	1
N901_V26	4	B	2	O	3
N901_V26	4	B	3	O	2
N901_V26	4	B	4	O	1
N901_V26	4	B	5	O	4
N901_V26	4	B	7	O	3
N901_V26	4	B	12	O	2
N901_V26	4	B	17	O	110
N901_V26	5	B	6	O	1
N901_V26	6	B	2	O	3
N901_V26	6	B	6	O	1
N901_V26	7	B	2	O	6

Use the up or down arrow keys to look through the data that has just been output. As you can see, the only value in the "mission_id" data element is "N901_V26", which is expected since you asked for that particular mission_id in your SQL conditional statement (where mission_id='N901_V26'). The next output column shows data element "weapon_type" followed by "weapon_side", "target_type", "target_side" and "lost".

Notice in your output:

Where weapon_side = "B" (BLUFOR), target_side = "O" (OPFOR).
Where weapon_side = "O" (OPFOR), target_side = "B" (BLUFOR).

The numeric value found in data element "lost" represents the number of targets (of the type found in the "target_type" column) that were lost to the weapon system found in the weapon_type" column. Therefore:

In the first line of output:
4 OPFOR targets type "1" were lost to BLUFOR weapon type "1."

In the second line of output:
4 OPFOR targets type "2" were lost to BLUFOR weapon type "1."

In the third line of output:
1 OPFOR target type "3" was lost to BLUFOR weapon type "1."

Write an explanation of all information that is given in the fourth line of output. Be as specific as you can.

_____

_____

_____

_____

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_____

Check your answers with the answer sheet on the next page.

Answer Sheet for BDA Database Practical Exercise #2.

All output data is for mission_id number "N901_V26."

The BLUFOR weapon type is "2"

The OPFOR target type is "1"

One OPFOR target type "1" was lost to BLUFOR weapon type "2"

When finished, erase your output. (Press the *[F3]* key; or *[F1]*; E(nd); *<enter>*.)

Blank your screen. (Press *<shift>F4*; or *[F1]*; B(lank); *<enter>*.)

Practical Exercise #3: Extract data from the Weapon and Target Tables (independently).

In practical exercise #2 you used the BDA Table. Although the table contains (among other data elements) the target type (code) and weapon type (code), it does not contain a description of what that code means. For instance, you may find in the BDA Table that a BLUFOR weapon_type code is "1", and that the OPFOR target_type code is "17". But in order to know what the BLUFOR weapon system description is, and the OPFOR target system description is, you must look in two other tables, the Target Table and the Weapon Table.

In this practical exercise you will work with the Weapon Table, and then the Target Table. These two tables contain weapon system codes and target system codes that are currently in effect at the CTCs.

First work with the Weapon Table:

Enter the following:

```
select weapon_side,
  weapon_type,
  weapon_desc
from weapon
order by weapon_side,weapon_type
```

Execute the command. (Press the *[F5]* key; or *[F1]*; *G*(o); *<enter>*.)

Compare your statement and output with the answer sheet found on the next page. If yours does not match what's on the answer sheet, ask a colleague for help.

```
1) /*******************************************************/
2) /* OUTPUT FOR SDA DATABASE PRACTICAL EXERCISE #3   */
3) /*           WEAPON TABLE                          */
4) /*******************************************************/
5) SELECT WEAPON_SIDE,
6) WEAPON_TYPE,
7) WEAPON_DESC
8) FROM WEAPON
9) ORDER BY WEAPON_SIDE, WEAPON_TYPE
```

```
+-------+-------+----------------------+
\WEAPON\WEAPON\WEAPON_DESC              \
+-------+-------+----------------------+
\B      \       1\TANK (M1A1)           \
\B      \       2\TOW                   \
\B      \       3\DRAGON/VIPER          \
\B      \       4\25MM BRADLEY/M2/IFV   \
\B      \       5\ATTACK HELICOPTER     \
\B      \       6\CLOSE AIR SUPPORT     \
\B      \       7\ARTILLERY             \
\B      \       8\MINES                 \
\B      \       9\MAINTENANCE           \
\B      \      10\MILES MALFUNCTION     \
\B      \      11\60MM MORTAR           \
\B      \      12\81MM MORTAR           \
\B      \      13\105MM HOWITZER        \
\B      \      14\AC 130                \
\B      \      15\STINGER               \
```

Now use the up or down arrow keys to look through the data that has just been output. As you can see, the data is ordered as you directed in your SQL command statement (order by weapon side, weapon type). The BLUFOR weapon_side records are listed first, then the OPFOR weapon_side records. The BLUFOR weapon_type codes are ordered (1 through 26), and the OPFOR weapon_type codes are ordered (1 through 25). The weapon_description is given for each of the weapon_type codes for each side (BLUFOR then OPFOR).

Erase your output. (Press the *[F3]* key; or *[F1]*; E(nd); *<enter>*.)

Blank your screen. (Press *<shift>F4*; or *[F1]*; B(lank); *<enter>*.)

Now work with the Target Table.

Enter the following:

select target_side,
  target_type,
  target_desc
from target
order by target_side,target_type

Execute the command. (Press the *[F5]* key; or *[F1]*; G(o); *<enter>*.)

Compare your statement and output with the answer sheet found on the next page. If yours does not match what's on the answer sheet, ask a colleague for help.

```
1) /********************************************************/
2) /* OUTPUT FOR BDA DATABASE PRACTICAL EXERCISE #3  */
3) /*          TARGET TABLE                          */
4) /********************************************************/
5) SELECT TARGET_SIDE,
6) TARGET_TYPE,
7) TARGET_DESC
8) FROM TARGET
9) ORDER BY TARGET_SIDE,TARGET_TYPE
```

TARGET	TARGET	TARGET_DESC
B	1	TANK (M1A1)
B	2	IFV (BRADLEY)
B	3	APC (M113)
B	4	TOW
B	5	VULCAN
B	6	COMBAT ENGINEER VEH.
B	7	AVIATION
B	8	60MM MORTAR
B	9	81MM MORTAR
B	10	105MM HOWITZER
B	11	STINGER
B	12	ATTACK HELICOPTER
B	13	SCOUT HELICOPTER
B	14	UTILITY HELICOPTER
B	15	B-36 RADAR

Use the up or down arrow keys to look through the data that has just been output. As you can see, the data is ordered as you directed in our SQL command statement (<u>order by target_side, target_type</u>). The BLUFOR target_side records are listed first, then the OPFOR target_side records. The BLUFOR target_type codes are ordered (1 through 36), and the OPFOR target_type codes are ordered (1 through 24). The target_description is given for each of the target_type codes for each side (BLUFOR then OPFOR).

Erase your output. (Press the *[F3]* key; or *[F1]*; *E*(nd); *<enter>*.)

Blank your screen. (Press *<shift>F4*; or *[F1]*; *B*(lank); *<enter>*.)

Go to the next practical exercise.

Practical Exercise #4: Extract data from multiple tables.

In practical exercise #2 you extracted weapon and target type codes for a particular mission (N901_V26) from the BDA Table. In practical exercise #3 you extracted the weapon and target descriptions for the weapon and target system codes in effect at the CTCs from the Weapon Table and the Target Table. This practical exercise requires that you be prepared to try something daring!

You are going to attempt to extract weapon and target information for a particular mission from three tables at the same time. This is not for amateurs but if you have gotten this far you are no longer an amateur. Don't let your initial confusion scare you away from what might seem difficult; if you follow closely, you will see how simple it really is. (The good news is that you will not be asked to do this in your skills assessment.)

The SQL command statements you will use in this exercise have the same structure as all the others you have been working with; the only difference is that since you are now working with three tables, and some of the data elements have the same name in all three tables, you have to put a "prefix" in front of each data element name so that the computer knows which table to get that data element from. Also, you have to put a period between that prefix and the data element. (This will become clearer when you see what the command looks like.)

First give all three tables a "prefix."

> The prefix for the BDA Table will be "b".
> The prefix for the Weapon Table will be "w".
> The prefix for the Target Table will be "t".

Enter the following:

```
select b.weapon_side,
  b.weapon_type,
  w.weapon_desc,
  b.target_side,
  b.target_type,
  t.target_desc,
  b.lost
from bda b,
weapon w, ;
target t
where b.mission_id='N901_V26'
  and b.target_side='O'
  and b.weapon_type=w.weapon_type
  and b.weapon_side=w.weapon_side
  and b.target_type=t.target_type
  and b.target_side=t.target_side
order by b.weapon_side,w.weapon_desc
```

Study the command before you go on.

Notice that you are getting five data elements from the BDA table
(select b.weapon_side,b.weapon_type,b.target_side,b.target_type, b.lost),

one data element from the Weapon Table
(w.weapon_desc),

and one data element from the Target Table
(t.target_desc).

You should expect to see the seven fields or columns of data mentioned above on our
output sheet (five + one + one).

You included each table name and its prefix
(from bda b, weapon w, target t).

In the BDA Table you only asked for data for mission_id "N901_V26"
(where b.mission_id='N901_V26')   and

you only want data where the OPFOR was the target (which means that the BLUFOR
was firer/weapon)
(where b.target_side='O')   and

you want to match the weapon_type in the BDA Table to the weapon_type in the Weapon Table
(where b.weapon_type=w.weapon_type)   and

you want to match the weapon_side in the BDA Table to the weapon_side in the Weapon Table
(where b.weapon_side=w.weapon_side)   and

you want to match the target_type in the BDA Table to the target_type in the Target Table
(where b.target_type=t.target_type)   and

you want to match the target_side in the BDA Table to the target_side in the Target Table
(where b.target_side=t.target_side).

Finally, you want our output to be ordered first by the weapon_side in the BDA Table, and second by the corresponding weapon_desc in the Weapon Table.
(order by b.weapon_side,w.weapon_desc).

Execute the command. (Press the *[F5]* key; or *[F1]*; G(o); *<enter>*.)

Compare your statement and output with the answer sheet on the next page. If yours does not match what's on the answer sheet, ask a colleague for help.

```
 1) /********************************************************/
 2) /* OUTPUT FOR BDA DATABASE PRACTICAL EXERCISE #4  */
 3) /********************************************************/
 4) SELECT B.WEAPON_SIDE,
 5) B.WEAPON_TYPE,
 6) W.WEAPON_DESC,
 7) B.TARGET_SIDE,
 8) B.TARGET_TYPE,
 9) T.TARGET_DESC,
10) B.LOST
11) FROM BDA B,
12) WEAPON W,
13) TARGET T
14) WHERE B.MISSION_ID='N901_V26'
15) AND B.TARGET_SIDE='0'
16) AND B.WEAPON_TYPE=W.WEAPON_TYPE
17) AND B.WEAPON_SIDE=W.WEAPON_SIDE
18) AND B.TARGET_TYPE=T.TARGET_TYPE
19) AND B.TARGET_SIDE=T.TARGET_SIDE
20) ORDER BY B.WEAPON_SIDE,W.WEAPON_DESC
```

\WEAPON\	WEAPON\	WEAPON_DESC	\TARGET\	TARGET\	TARGET_DESC	\LOST \
\B	\	18\20MM VULCAN	\0	\	7\HIND	1\
\B	\	4\25MM BRADLEY/M2/IFV	\0	\	4\AT-5	1\
\B	\	4\25MM BRADLEY/M2/IFV	\0	\	3\GROM	2\
\B	\	4\25MM BRADLEY/M2/IFV	\0	\	12\SA-7	2\
\B	\	4\25MM BRADLEY/M2/IFV	\0	\	2\BMP	3\
\B	\	4\25MM BRADLEY/M2/IFV	\0	\	7\HIND	3\
\B	\	4\25MM BRADLEY/M2/IFV	\0	\	5\MTLB	4\
\B	\	4\25MM BRADLEY/M2/IFV	\0	\	17\INFANTRY	110\
\B	\	7\ARTILLERY	\0	\	2\BMP	6\
\B	\	7\ARTILLERY	\0	\	17\INFANTRY	20\
\B	\	5\ATTACK HELICOPTER	\0	\	6\ZSU-23-4	1\
\B	\	6\CLOSE AIR SUPPORT	\0	\	6\ZSU-23-4	1\
\B	\	6\CLOSE AIR SUPPORT	\0	\	2\BMP	3\
\B	\	15\STINGER	\0	\	8\AVIATION	1\
\B	\	2\TOW	\0	\	1\TANK (T-72)	1\
\B	\	1\TANK (M1A1)	\0	\	3\GROM	1\
\B	\	1\TANK (M1A1)	\0	\	2\BMP	4\
\B	\	1\TANK (M1A1)	\0	\	1\TANK (T-72)	4\

```
(18 ROWS)
END OF REQUEST
```

If your output matches the answer sheet, save your SQL command statement and the results (the data output) in a file.

To do this, you must "write" what you have created to a "file" and give that file a name.

Press the *[F1]* key to return to the command line.

Press the *F*(ile) key; then press the *<enter>* key.

Press the *W*(rite) key; then press the *<enter>* key.

Enter a filename as follows:

> *initials4.bda* (substitute your own initials, i.e.,
> JS4.bda = John Smith, Practical Exercise #4, BDA Database).

When you are satisfied that you have typed the filename correctly, press the *<enter>* key.

Your file will be saved in your user area with the same name. You will print the file after you have exited the BDA database.

Erase your output. (Press *[F3]*; or *[F1]*; *E*(nd); *<enter>*.)

Blank your screen. (Press *<shift>F4*; or *[F1]*; *B*(lank); *<enter>*.)

Exit (or quit) your session in SQL. (Press *[F1]*; *Q*(uit); *<enter>*.)

Go to the next page.

PRINT YOUR FILES:

You will now print the file which you saved during practical exercise number 4.

    1. Select "Manipulate Files" by typing 7; then press *<enter>*.

    2. Select "Print Files" by typing 3; then press *<enter>*. The files you created during the practical exercises are highlighted on the screen.

    3. Enter the name of the file you saved in BDA practical exercise #4: *Your initials4.bda*.

    4. After you enter the name of the file you want to print press *<enter>*.

The file will print on the high speed printer and the printout will have your user number on the first page. Make sure you do not take someone else's printout.

    5. Retrieve the printout from the printer and have it checked by a facilitator.

    6. Select "Return to Main Menu" by typing 7; then press *<enter>*.

With the skills you have acquired in exercises 1-3, you will have no trouble with the BDA Database skills assessment. If your issue requires extensive work with the BDA Database, we recommend that you work through the materials in <u>User's Guide to the Battle Damage Assessment (BDA) Database</u>, 1 July 1992, pp. 4-8.

Proceed to the skills assessment.

MTP Database

The MTP Database contains ratings of tasks based on Training and Evaluation Outlines (T&EOs) that are contained in Mission Training Plans (MTPs). These ratings are currently limited to JRTC, but the structure of the database will accommodate other CTCs.

The feedback from JRTC is tied to the Data File Documentation for each rotation. Task numbers are distinctive for each rotation. The index for rotation 901 is attached. The full Data File Documentation is with the references.

The structure of the MTP Database is also attached. Since you will be working with the RES (for results) table, we have included more detail about the data elements in that table.

OCs rate tasks on a three-point scale: Untrained (1), Needs Practice (2), and Trained (3). They may also rate subtasks as NO-GO (2) or GO (3). However, since subtask titles are not currently (FY 93) accessible in the MTP database, you should limit your plans for MTP data to the task level. There is a record for each task and subtask. If you do not exclude subtasks, they will be included in any request for task ratings. When they are included, the task rating will be 0 (for missing). You can exclude them by selecting only cases where the task evaluation is not zero. One way to do that is to use a "not equal to" command when you select cases. As you will see in the practical exercise, the format for "not equal to" is !=. With that exception, you have already practiced the INGRES skills required to get information. The practical exercise illustrates how those skills apply for this database.

P.E.: Extract Data from RES Table for One Task

For this exercise, determine the status of units in JRTC rotation 9001 on the company task "Conduct a Tactical Roadmarch."

ID CTC task number.	• Check the index of T&EO tasks for rotation 901 for the task. • Note that the CTC task number is 110.
Enter the MTP Database.	• Double click on *POM Archives*. • Select Query MTP Database from Analyst Workstation Menu (2, *Enter*).

Select data elements.	select ctc_task,
	             uic,
	             element,
	             eval_date,
	             ctsk_eval

ID table.	from res
Select cases.	where ctc_task = 110 and ctsk_eval != 0 and ctc_id = 'JRTC' and rotation = 901
Execute command.	*F5* or (*F1, G, Enter*)
Read results.	1. What company was rated on the task?
	2. What was its training status on the last rating?

1. What company was rated on the task?

   B Company of 5-21 was rated two times. (Element 6 = B Co)

2. What was its training status on the last rating?

   Each rating was "needs practice." (CTSK_EVAL 2 = Needs Practice)

For the Skills Assessment you will need to find a task in the documentation and write an SQL query similar to the one in the P.E.

Tab E
betwee pg 53-54

ANTI-TANK PLATOON TASKS

TASK	TITLE	PA
278	OCCUPY AN ASSEMBLY AREA	
282	MOVE MOUNTED	
285	MAINTAIN OPERATION SECURITY	
286	PREPARE FOR COMBAT	
287	CONSOLIDATE AND REORGANIZE	
288	PLAN & CONTROL COMBAT OPERATIONS	
289	SUSTAIN	
290	CONDUCT VEHICLE OPERATIONS	

MANEUVER PLATOON TASKS

TASK	TITLE	PA
325	PERFORM HELICOPTER MOVEMENT	
328	PERFORM RAID	
329	PERFORM POINT AMBUSH	
335	ESTABLISH PATROL BASE	
339	PERFORM PASSAGE OF LINES	
340	CONDUCT A PASSAGE OF LINES	
341	PERFORM LINKUP	
342	INFILTRATE/EXFILTRATE	
348	PERFORM TACTICAL ROAD MARCH	
349	OCCUPY ASSEMBLY AREA	
351	ASSAULT	
354	MOVE TACTICALLY	
355	CROSS DANGER AREA	
357	RECONNOITER AREA	
358	RECONNOITER ZONE	
371	CONSOLIDATE AND REORGANIZE	
373	OCCUPY OBJECTIVE RALLY POINT	
385	OCCUPY OBSERVATION POST/PERFORM SURVEILLANCE	
388	EMPLOY FIRE SUPPORT	
390	SUSTAIN	
391	PERFORM AREA AMBUSH	
395	MAINTAIN OPERATIONS SECURITY	

COMMUNICATIONS TASKS

TASK	TITLE	P
500	DEVELOP COMMUNICATIONS PLAN	
501	IOM COMMUNICATIONS SYSTEMS IN SPT OF BN	
502	IOM COMMUNICATIONS SYSTEM IN SPT OF COMPANY	
503	MANAGE COMMO SYSTEMS IN SPT OF BN	

COMMAND AND CONTROL TASKS

FIRE SUPPORT TASKS

RADAR TASKS

FIRING BATTERY TASKS

AIR DEFENSE ARTILLERY TASKS

COMBAT SERVICE SUPPORT TASKS

INTELLIGENCE TASKS

PSYCHOLOGICAL OPERATIONS TASKS

SPECIAL FORCES OPERATIONS DETACHMENT (A/B TEAM) TASKS

MTP Database Structure

The MTP database consists of six tables:

(A)   Table AMTP contains information about the MTPs loaded into the database.
(1)	MTP_NO	The Numeric identifier of the MTP, e.g. 71-2
(2)	MTP_DATE	The date the MTP went into effect.
(3)	MTP_TITLE	The official title.
(4)	PRSCH_ID	The proponent school ID number.
(5)	PRSCH_TITLE	The proponent school name.
(6)	MTP_ELMT	The relevant echelon for this MTP.

(B)   Table TASK contains the basic task information for all MTP tasks.
(1)	CTSK_TITLE	The descriptive task title.
(2)	MTP_NO	The MTP from which this task was taken.
(3)	CTSK_ECH	The relevant echelon for this task.
(4)	CTSK_ID	The original identification from the MTP for this task.
(5)	CTSK_COND	Task conditions.
(6)	CTSK_NO	The original identification number from the MTP for this task.

(C)   Table TSTAND contains the task standards for all MTP tasks.
(1)	CTSK_STD	The task standard.
(2)	CTSK_ID	The task id to which the standard applies.

(D)   Table SUBTASKS contains descriptions of all the subtasks to MTP tasks in the database.
(1)	CRITICAL	An indicator whether or not this is a critical subtask (T=Yes; F=No).
(2)	LEADER	An indicator whether or not this is a leader subtask (T=Yes; F=No).
(3)	STSK_NO	Subtask number.
(4)	STSK_STD	Subtask standard.
(5)	CTSK_ID	The task id for which this is a subtask.

(E)   Table CROSS provides the correlation between the MTP tasks and CTC-specific T&EOs.
(1)	CTSK_ID	The MTP task ID.
(2)	CTC_TASK	The CTC-specific ID.
(3)	STSK_NO	The MTP subtask ID.
(4)	CSTSK_NO	The CTC-specific subtask ID.

(F) Table RES contains the evaluation data from the CTCs, as collected in their T&EO system.

(1)	PHASE_NO	Phase during which this element was evaluated.
(2)	CTC_TASK	CTC-specific task ID.
(2a)	CSTSK_NO	CTC-specific subtask ID (if this is a subtask evaluation).
(3)	UIC	Unit Identification Code.
(4)	ELEMENT	Specific element for which data were collected.

For 9001:

1. Battalion TF	2. Company A
3. 1st Plt Co A	4. 2nd Plt Co A
5. 3rd Plt Co A	6. Company B
7. 1st Plt Co B	8. 2nd Plt Co B
9. 3rd Plt Co B	10. Company C
11. 1st Plt Co C	12. 2nd Plt Co C
13. 3rd Plt Co C	13. Aviation

(5)	CTC_ID	CTC identification (JRTC, NTC, CMTC).
(6)	ROTATION	Rotation ID (9001, 8904,...).
(7)	EVAL_DATE	Date data were collected.
(8)	CTSK_EVAL	Task evaluation.

1 = Untrained
2 = Needs Practice
3 = Trained

(9)	CSTSK_EVAL	Subtask evaluation.

1 = NA
2 = NO-GO
3 = GO

Automated Take-Home Package (THP)

The automated THP shares the benefits of the paper-based THP with the added value that the automation helps you find relevant sections quickly. The benefits are especially important if you are working with more than one rotation. The automated THP has all the benefits of a stack of THPs with paper clips and yellow sticky papers marking the relevant comments and it's not nearly as messy.

This section covers three procedures you need to follow to get information out of the automated THP:

- Selecting relevant files with the menu
- Identifying specific information with the Search option
- Printing selelected sections from the THP

Selecting relevant files with the menu

The automated THP is organized into files for each unit. Practical Exercise 1 walks you through the process of entering the database and illustrates the content of the types of files.

P.E. 1: Content of Files

For this P.E. work with the armor task force in NTC rotation 901.

First enter the POM Archives.
- Double click on POM Archives.

This brings up the Analyst Workstation Menu. Select: View Take Home Packages from the menu.
- Type: *5, Enter*

The Content Selection Menu appears; this menu is used to narrow the files to be selected by using the sub-menus for each choice. In this case you are interested in the files for armor in NTC rotation 901. First identify the CTC. Select CTC Selection.
- Type: *c*

Select the NTC from this menu.
- Type: *3, Enter*

After pushing the *Enter* key, you return to the main menu. Throughout the process, any areas highlighted in white are not available. Now select the rotation you want. Select Rotation from the menu.
- Type: *r*

You are now in the Rotation Selection Menu. Notice that the rotations preceded by the letter J are highlighted in white. These are JRTC rotations and may not be selected. Select rotation N901.
   • Type: *11, Enter*

Again you have returned to the main menu. Select the Organizational Type from the main menu.
   • Type: *o*

This menu gives you the type of organizations available for this rotation at the NTC. You want armor TF.
   • Type: *1, Enter*

You should be back at the main menu. Now select the type of file you wish to see.
   • Type: *t*

Listed are the file types available.

   1. SUBORD ELEM MSN SUM: OC comments for companies and special platoons grouped by BOS for each mission.

   2. STATISTICS: The BDA tables.

   3. MISSION STATEMENT: OC description of each mission and commander's mission statements.

   4. NCO OBSERVATIONS: Comments from OC NCOs to the unit's NCOs.

   5. MISSION PREF SUM: OC comments by BOS and phase (plan, prepare, execute) for each force on force mission.

   6. PERFORMANCE TRENDS: OC overview of the unit's persistent strengths and weaknesses grouped by BOS for all force-on- force missions in the rotations.

   7. LF PERF SUM: Same as Mission Performance Summaries except it applies to the live fire missions.

You select the file type in the same manner as for any of the other sub-menus.
   • Type: *# Enter* (Use: 1 Enter for this example)

This time instead of returning to the main menu, you are given a list of the files that conform to the commands that you have given. Again selecting the file you want is as

easy as selecting the number and pressing *Enter*. To escape this menu and return to the main menu, press *Esc* twice. Select file 1.
  • Type: *1, Enter*

Now you are viewing the information contained in a file. Rules for moving around in the file are at the bottom of the screen. Try them a few times and then:
  • Press *Esc* twice.

This takes you back to the list of files so you can select another file to view. But since there was only one, return to the main menu.
  • Press *Esc* twice.

Again you have returned to the main menu. Now erase the commands to narrow your file choice.
  • Press *Esc* twice.

When you work with more than one rotation, the menu helps narrow the number of files. Once you narrow the candidates to 19 or fewer, you can begin selecting files. The Performance Summary and Trends files are organized by BOS. To understand the file structure and how the menu operates, work through Practical Exercise 2.

P.E.2: File Structure and Menu

For this exercise, assume you are studying an issue related to CSS at NTC.

Narrow files to CSS in NTC Rotation 901.	• Select NTC: *C, 3, Enter*. • Select Rotation 901: *R, 11, Enter*. • Select CSS: *B, 6, Enter*.

Note that three types of file address CSS for each task force: Mission Performance Summary, Performance Trends, and Live Fire Performance. If you are looking at BOS performance in force on force missions, you should look at the Mission Performance and Performance Trends files.

Identifying specific information with the Search option

The Search option is the whiz-bang feature that makes the automated THP especially valuable. Practical Exercise 3 illustrates its benefits.

P.E. 3: Identify Information with Search

Assume you are studying casualty evacuation (MEDEVAC) at NTC. MEDEVAC falls under the CSS BOS. To see how the Search operates, work with the CSS Mission Performance file for the armor task force in Rotation 901.

Access file.	Type *1*, *Enter*.
Search for MEDEVAC.	• Type *S*. • Type "medevac".
Review references.	You get two references (the number of references is shown in the upper left corner of your screen). The first reference is in the middle of the screen. Move to the next comment by typing *S*. When you reach the last comment, *S* takes you back to the first one.
Repeat Search with more inclusive word.	• Type *Esc* twice, then bring in file 1 again. • Type *S*. • Type "evac". You will now get 12 references. They include MEDEVAC as well as medical evacuation and casualty evacuation. Of course you will also get references to maintenance evacuation, but that is a small price for more thorough coverage.

Printing selected sections of THP

As you identify sections of the THP that relate to your issue, you have several options for capturing the comments. The obvious choices are to write notes of brief comments, print the screen, or copy the full file. The Windows environment of the Combat Analyst Workstation gives you the option of building your own file of pertinent comments. Practical Exercise 4 illustrates that option.

For this P.E. work with the CSS file for the armor TF in NTC rotation 9001. This is the file you worked with in P.E. 3.

Copy pertinent comment	• Block the section you want to copy by holding down the left button on the mouse while moving the mouse until the section you want is highlighted. In this case block the second paragraph for mission 1, Defense in Sector. • Click on *Edit*. • Click on *Copy* (on the sub-menu).
Paste comment in word processor.	• Click on the minus in the left corner of the frame. • Click on *Switch To* (on the sub-menu). • Click on *Program Manager*, then on the *Switch To* button. This will take you to the original Windows screen. • Double click on *Write*. (You could also work with Notebook, but you have more flexibility in Write.) • Put the curser where you want to insert the section. In this case, you need to be in front of the end of file symbol. • Click on *Edit*. • Click on *Paste* (on the sub-menu).
Print.	• Click on *File*. • Click on *Print* (on the sub-menu). You would normally wait until you have several comments before you print.
Return to Automated THP.	• Click on the minus in the Write window frame. • Click on *Switch To* (on the sub-menu). • Click on *Telnet-POM<2>*, then on *Switch To* button.

The skills assessment for this segment is similar to P.E. 3. If you understand that procedure, you will have no trouble with the assessment.

The Graphics Database contains digital records of Operations Overlays, Execution Matrices, and like unit generated data originally received by the Archive in paper form. The advantage of digitized graphics lies in ease and versatility of use. You can quickly call-up and view graphics and OPORD data instead of mulling through boxes of paper and overlays. Another advantage is portability of data--one floppy disk can hold multiple graphics files. In addition, graphics may also be easily imported into your word-processed research report. Ultimately, users will have remote access to Archive graphics files, enabling them to down-load graphics files directly to their own computer.

This section covers procedures necessary to retrieve and print unit generated data found in the Graphics Database. These procedures include:

- Downloading graphics files
- Displaying mission graphics
- Editing mission graphics
- Printing graphics
- Saving graphics files

Downloading graphics files

Start at the initial Windows menu screen. Select the Graphics Database by double clicking with your mouse on the *Graphics Database* icon. You should then see a screen with the familiar Windows Tool Bar across the top and the title of the program, **GRAPHICS FILE DOWNLOAD**, written in the middle of it. You should also see the **DOWNLOAD** and **VIEW** "buttons," (grey rectangles center screen). To Download mission specific graphics files, follow each step and its corresponding commands in the order given in Practical Exercise 1.

P.E. 1: Download Graphics Files

For this P.E. download the operations overlay and execution matrix for NTC mission N922_N03.

STEPS	COMMANDS
Select CTC	• Click on *CTC SELECTION* (upper left corner of screen). • Click on *NTC* from CTC Selection menu.
Select Rotation	• Click on *1992* from the Fiscal Year menu. • Click on *02* from Rotation menu.
Select Mission	• Click on *N922_N03* from Missions List.

STEPS	COMMANDS
Select Candidates	• Click on *Operations Overlay* and *Execution Matrix* from Download Candidates list.
Download	• Click on *DOWNLOAD*.

Allow from five to twenty minutes for files to download as files may vary in size and quantity.

Displaying mission graphics

After you have downloaded the files, the program will take you directly into Display Mission Graphics. Select the file you wish to view first with a single click on the mouse. The graphic will appear on your screen.

You may view another graphic while keeping the first on your screen. Move the first image by positioning the mouse on the solid blue bar across the top of the window. Depress the left mouse button and drag the mouse so that the window moves to a different part of the screen, thus exposing the list of files available. After you choose your second file, the two will appear in separate windows, with only one window active at a time.

You may also minimize (or hide) a displayed graphic by clicking on the upside-down triangle in the upper right corner of the window. This allows you to free up screen space while keeping that graphic file "open." Simply click on the small graphic icon and the file will maximize (reappear).

P.E. 2: Display Mission Graphics

Select Operations Overlay (graphic will appear on screen). Minimize it after you've ogled it a bit.

Select Execution Matrix as your second image (you should have downloaded this file along with the Operations Overlay).

Now try moving the Execution Matrix and maximizing the Operations Overlay (graphic should disappear while leaving an icon in the lower left of screen)

If no image appears on screen, or windows will not move or minimize, consult one of the facilitators.

Editing mission graphics

You have a variety of tools for altering the graphic. Explanations of basic features are given below. Information on other options for manipulation may be found using the Help Index in the upper right hand corner of the Tool Bar (double click gets you into Help).

Feature	Command
Lighten over-all image	F8 (see pallet under Edit menu)
Darken over-all image	F7 (see pallet)
Increase contrast	F10 (see pallet); alt F10 (Gamma+)
Decrease contrast	F9 (see pallet); alt F9 (Gamma-)
Rotate 90 degrees	Click on *Rotate* from the Edit menu.
Enlarge or reduce image	Click on desired size increase or decrease from the Edit menu.
Dither entire image	Click on *Quick Dither* from the Options menu.
Use entire page to print image	Click on *Full Page Print* from the Options menu.

P.E. 3: Edit Mission Graphics

Edit the Operations Overlay from mission N922_N03 using the following commands:

Rotate your graphic (image should rotate so the left of the image is at the top of the screen).

Use Quick Dither (creates a grayish background that helps in reducing the shadow or smudgy look of some graphics). Not all graphics will benefit from this process.

Size your graphic by using the *Resize X2* feature in the Edit menu. You should usually enlarge the image to at least twice its initial on-screen size when you plan to print the image. Be sure to check under the Options menu that **Resize To Scale** is checked off. If not, select it and proceed.

You may search the Help feature if you wish to know more about the other commands in the **File, Edit,** and **Options** menus. If you edit too much, the image becomes

unreadable. If that happens, exit the file and display it again (you do not have to repeat the download procedure).

Printing graphics

Printing selected graphics is simple. Be sure to select *Full Page Print* from the Options menu before printing. Next, click on File menu and select *Printer Options*. Choose Landscape for wider documents, or *Portrait* if you might include the graphic in a report. Press OK button when finished in Printer Options. When you are ready to print, select *Print* from the Edit menu. Your graphic will take a few minutes to print.

P.E. 4: Print Graphics

• Print the Operations Overlay in landscape style on as much of the page as possible.

• Print the Execution Matrix in portrait style using as much of the page as possible.

• Pick up the graphics at the laser printer.

Saving graphics files

If you are going to include a graphic in a briefing or report, you should save the graphic file. The *Save* process starts with the File menu. The major decision in the process concerns *File Format* in the Options sub-menu. If you are working with recent versions of Word Perfect, you should save each file in the PCX format.

For the skills assessment you will retrieve and print two graphics from a different mission.

Access Data from OPORDs and Overlays

Draft Issue April 23, 1993

Module
Objective

At the end of this module you will be able to access and use data from the paper OPORDs and Overlays from the various CTCs.

Purpose

OPORDs and Overlays are a major source of data available to you at the archive. Successfully being able to utilize this information will greatly aid you in your research and analysis.

Prerequisitès

- Orientation Module or Windows Tutorial
- Using TRACS
- Revise Research Issue

Resources You
Will Need

- JRTC and NTC Paper Data Boxes
- CMTC Take-Home Package
- AAR Slides and Videotapes
- The BDA Database
- Computer Instrumentation System Graphics
- THP paper and digital

Estimate Time To
Complete

2 hours

Access Data From OPORDS and Overlays

This module serves two primary purposes:

1) To acquaint the attendee with the types and formats of unit generated operation orders (OPORDs) and corresponding Overlays
2) To instruct the attendee on how to retrieve data from these sources.

Performance Objective

Given a set of task force operation orders (OPORDs) and corresponding Overlays, extract data applicable to your research plan.

Skills Assessment

At the end of this module you will find a Skills Assessment. If you are already prepared to demonstrate the skills described in the Performance Objective, proceed to the Skills Assessment now. Otherwise, work through the Practical Exercises in this module.

Introduction

The CTC Archive includes a large number of task force operations orders (OPORDs) and graphics (referred to as Overlays). These documents communicate the commander's plan to the subordinate commanders. Since the quality of plans and clarity of implementing documents determines whether units synchronize their power in the battle, an assessment of OPORDs and Overlays is vital for understanding how the battle developed. Any case study of combat should begin with planning documents, especially the Commander's Intent, task force structure, and Operations Plan. Another broad area of issues concern the quality of the documents themselves, especially the extent to which they conform with current doctrine. Such issues could include the impact of training programs on plans and the impact of doctrinal plans on mission outcomes.

The CTC Digital Data Center and Archive retains OPORDs and graphics in paper as well as digital formats.. This module covers the paper format in three sections, with particular attention paid to OPORDs and Overlay content:

- Retrieve paper OPORDs and Overlays
- Extract data from OPORDs
- Extract data from Overlays

Proceed to Part 1 on the next page to begin the module.

Part I: Retrieve Paper OPORDs and Overlays

The Archive retains Paper orders and graphics back to three years from the most current rotation for each CTC.

JRTC and NTC Paper Data boxes contain all OPORDs as well as other paper data received by the Archive. On the Paper Data shelves you will see a number of boxes marked with rotation code. Beginning with the first letter of each CTC, the code designates fiscal year and rotation number for that year. Because NTC conducts more than nine rotations annually, letters designate rotations 10 through 13. The code outside the box should read like the first four digits of the Mission ID number: e.g., N92B; J919; C902 (although there are a few boxes for CMTC, OPORDs aren't kept in these boxes, as explained later).

Ask for assistance when removing paper data boxes. Once the box is opened you will notice NTC paper is divided by Task Force and mission in brown envelopes. JRTC OPORDs are found behind green file separators entitled "Unit Generated Data." Sheets taped on box-tops or on envelops are merely copies of data check-off sheets for your convenience, and are not meant to represent the contents of the box in its entirety. Currently, the check-off sheets only partially represent Archive held paper data. Artillery data and Administrative Logs, for example, have not yet been organized or recorded by mission, although they are included in same box as rotational information.

For NTC Fiscal Year '92 and late '91 paper data, look for green file separators in the boxes. On the left of the file separator is a catalog code, while on the right Mission ID is given. Use Mission ID found during your TRACS search when retrieving OPORDs and other mission specific materials.

Paper Overlays are included with OPORDs only for NTC missions. JRTC and CMTC do not often supply the Archive with paper versions of overlays. For CMTC and JRTC overlay retrieval, ask for assistance from the Archive Manager.

CMTC, unlike the other two CTCs, sends the Archive its OPORDs as part of the Take-Home Package. This proves extremely convenient for researchers, as CMTC divides its THP by mission instead of by BOS. Both unit generated and feedback, therefore, will appear behind a note-book separator labeled with mission type, date, and unit ID.

Should you have any difficulty finding the mission you need, ask for an Archive Technician. When you are finished, return your material to an Archive Technician for reshelving.

Part II: Extract Data from Operations Orders

The next two pages illustrates standard OPORD format (WARNOs and FRAGOs, follow the same format but contain less information).

<div align="center">Classification</div>

(No Change from oral orders)

<div align="right">
Copy No. __ of ___ copies
Issuing unit
PLACE OF ISSUE
Date-time group
Message Ref. No.
</div>

OPORD or OPLAN number

Reference:

Time Zone Used Throughout the Order:

TASK ORGANIZATION

I.   SITUATION

        A.   ENEMY FORCES
        B.   FRIENDLY FORCES
        C.   ATTACHMENTS AND DETACHMENTS
        D.   assumptions (only in OPLANS)

II.   MISSION STATEMENT

III.   EXECUTION

        A.   COMMANDER'S INTENT
        B.   CONCEPT OF OPERATIONS
           (1)   MANEUVER
           (2)   FIRES
           (3)   ENGINEERS OR M/CM/S (OBSTACLES)
           (4)   COUNTER AIR
           (5)   NBC (NUCLEAR/BIOCHEMICAL)
           (6)   IEW

<div align="center">Paragraph III continued next page</div>

(Classification)

C   SUB-UNIT INSTRUCTIONS
1)   TM A
2)   TM TANK
3)   CO C
4)   CO D
5)   SCOUT PLATOON
6)   MORTAR PLATOON
7)   ADA
8)   ENGINEERS
9)   GSR
other   applicable units may be listed

10)   RESERVE, IF DESIGNATED, IS ALWAYS LISTED JUST BEFORE COORDINATING INSTRUCTIONS

D.   COORDINATING INSTRUCTIONS

IV   SERVICE SUPPORT
A.   GENERAL
B.   MATERIAL AND SERVICES
C.   MEDICAL EVACUATION AND HOSPITALIZATION
D.   PERSONNEL
E.   CIVIL-MILITARY COOPERATION
F.   MISCELLANEOUS

V   COMMAND AND SIGNAL
A.   COMMAND
B.   SIGNAL

Acknowledge:

Commander's Signature _____

Authentication:

ATTACHED ANNEXES   (variable order to following annexes)

A.	INTELLIGENCE	D.	ENGINEERS
B.	OPERATIONS OVERLAY	E.	AIR DEFENSE
C.	FIRE SUPPORT	F.	SERVICE SUPPORT
G.	EXECUTION MATRIX	X.	OTHERS AS PERTINENT

Get a copy of the OPORD from NTC rotation 9202. Peruse the OPORD using Figure 2 as a guide and comparison. While OPORD 9202-3 is above average, it does not correspond exactly with standard format. Still, it conveys the most valuable information:

- Task Organization
- The five paragraphs and corresponding annexes

It must be noted that task force staff prepare OPORDs under high degrees of stress in nearly true-to-life battle conditions. As a result, documents sometimes vary from the standard. Since it's possible a portion of OPORD vital to your inquiry may not be included with the Archive copy, notes on alternative sources of the same data have been provided.

Task Organization

A Task Force is not usually an organic army unit. To further explain, a Brigade typically travels to a CTC with two combat battalions, one Armor and one Mech for example. The Brigade customized the Task Forces, or cross attaches Armor element with Mech and vise-versa. But the Brigade often needs elements for support that it may not already have. Thus it is tasked or "sliced" the specialized troops it needs from the Division. The Brigade then tasks a number of these inorganic elements out to its Battalions, either by providing direct support (from mission to mission and still under the command of the Brigade -- referred to as a detachment) or by attachment (when an element is under the command of the Battalion Commander and may be used at his discretion over the entirety of the rotation). Just as the Brigade tasks out its assets (specialized units) to the Battalion, the Battalion, in turn, tasks out the appropriate assets to its own companies. Hence, what once were battalions have been transformed into Task Forces

The information on Task Organization may be presented in a matrix or may be written out in columns. Other times -- and this is especially true for FRAGOs -- only minor changes or "no change" may be provided. In such cases it is understood that the Task Organization refers to a previous OPORD.

Alternative Sources for Task Organization information:

- Take-Home Package
- AAR slides
- BDA information:
- Task Organization may be inferred from start of mission vehicle and weapon systems statistics at start of mission.
- Execution Matrix and Scheme of Maneuver Portions of the OPORD may be used to infer Task Organization.

Practical Exercise 1:
Identify Task Organization from an OPORD

Refer to your sample OPORD, page 1, to help you answer the following questions. If unfamiliar with Army symbology, refer Federal Manual FM 101-5-1, Operational Terms and Symbols of the U.S. Army, available in the Technical Reference Library (see the library manager).

1) Which Teams were provided a section of Engineers each according to the above Task Organization Matrix.

2) What is the unit designation or "name" for the Task Force Reserve combat unit.

3) What are the components of Bravo Company (or Team Bravo).

4) Which of the elements you've listed above have most likely been attached to the Task Force?

Feedback to Practical Exercise 1:
Identify Task Organization from an OPORD

Compare your answers with those below.

1) Which Teams were provided a section of Engineers each according to the above Task Organization Matrix.

   The Task Organization matrix shows a squad of Engineers each for Team Bravo and Team Charlie

2) What is the unit designation or "name" for the Task Force Reserve combat unit.

   Task Force reserve unit is 3-B Infantry: 3rd Platoon/B CO/Mechanized Infantry

3) What are the components of Bravo Company (or Team Bravo).

   The components of Team Bravo include:
   1st & 2nd Platoons of B CO, 3-47th Infantry
   3rd Platoon of C CO, 3-47th Infantry
   a Stinger ADA element
   1st squad of the 3rd section of the 102nd Engineers.

4) Which of the elements you've listed above have most likely been attached to the Task Force?

   Of the above, the Stinger and Engineer elements were Attached.

If your answers match those above, move on to the next section. If you have any questions, ask a facilitator or colleague now.

Description of OPORDs Paragraphs

The following pages provide descriptions of the five paragraphs found in a standard OPORD document. You will also find additional sources of information for the various paragraphs.

Paragraph One: Situation

This paragraph corresponds to the Situation Template (to be addressed later in the 2nd portion of this module). It is divided into three sub-paragraphs:

A. In the **Enemy Forces** sub-paragraph you may find enemy troop size and strength along with general movement descriptions. Often the only text given is a reference to annex A. This is true for your example OPORD. In any case, Annex A should provide this information in much clearer detail than anything written-out in this sub-paragraph. The Situation Template corresponds directly to this sub-paragraph and to Annex A (Intel Annex).

   Alternatives to Sources for Enemy Forces:
   - Situation Template
   - Computer Instrumentation System Graphics
   - OPFOR BDA and OPFOR OPORDs

B. **Friendly Forces** information will vary in availability, and often there will be little more than a reference to an Overlay and/or annex. Under Friendly Forces you should also find the Brigade's mission statement (in the OPORD provided The Brigade's mission is entitled "Higher's Mission").

   You will typically find more narrative description of Friendly Forces for a defensive mission where the Commander plans for a Passage of Lines. In other cases, written description is usually limited.

   Alternative Sources For Friendly Forces Information:
   - THPs
   - AARs and AAR slides

C. The **Attachments and Detachments** sub-paragraph provides the same data as does the Task Organization, but in narrative form. This is not always provided (as is the case for the example OPORD). When it is, the unit designation may be omitted. For example, the commander may tell you that Team Alpha is comprised of two Mech, two Armor, and a Scout platoon. Yet he may not tell you that they are the 1/A/2-35, 2/A/2-35 Armor Platoons and so on. Your sample OPORD does not contain this sub-paragraph.

   Alternative Sources For Attachments and Detachments:

- See Alternative Sources for Task Organization

Paragraph Two: Mission Statement

Here you will find a date/time grouping for the time of LD crossing; the mission type (MTC, Deliberate Attack, Hasty Defense, etc.) and the LD and Objective names. It should be noted that this statement finds its way into the Take-Home Package and AAR Slides later in the rotation.

Alternative Sources to Mission Statement:
- AAR slides and tapes
- Take-Home Package
- LD crossing may be inferred form BDA
- LD crossing time may be extracted from Daily Staff Journal
- Operations Overlay should graphically provide the same information

Paragraph Three: Execution

Execution is divided into several sub-paragraphs

A. While less detailed than the Concept of Operations, the **Commander's Intent** is more detailed than the mission statement and conveys the S3's general plan of action. An expanded version providing the Commander's rational behind his intentions may be included additionally. This expanded version does not often find its way to the OPORD (although your sample OPORD does). Whether provided in the expanded or the standard or in both versions, the intent provides goals and reasoning that further qualifies the Mission Statement, thus allowing the OCs to address a commander's performance directly in the face of his intentions.

B. **Concept of Operations** is divided into at least six smaller sections:

B.1) **Scheme of Maneuver:** Here you will find the planned movements of each sub-unit, battle position to battle position, in detail and in chronology. Expected phase line crossings and link-ups are also provided. The same information is provided in a graphical format called an Execution Matrix. This is often the only form of detailed maneuver information available in an OPORD. The Scheme of Maneuver and Execution Matrix both correspond to the Operations Overlay, but the Scheme of Maneuver often provides additional related information. Note that your OPORD refers to the Execution Matrix as Annex G.

B.2) **Fires** designates priority of Fire Support at the various stages of the mission and lists Artillery type and availability for direct and/or general support. Annex C is often the only detailed source of Fire Support information in an OPORD. Many times accompanied by a Fire Support Commander's Intent, Annex C provides the clearest picture of Fires when used in conjunction with target lists.

B.3) **Engineers** describes responsibilities and planned usage of mines, wire, trenches, and other obstacles for the benefit of the combat troops. Designates priority of Engineer support throughout the execution of the mission. You will typically see more here for defensive missions. Most OPORDs will refer you only to annex D, although some Commanders include Engineer elements on the Execution Matrix or on their matrix of Sub-Unit Instructions (see below).

B.4) **Counter-Air/Air Defense** provides Small Arms Fire Air Defense Standards (SAFADS) for the mission, describes Air threat, and Close Air Support. Most Commanders refer the reader to an ADA annex where this information will appear in matrix form.

B.5) **NBC** section conveys the Nuclear and/or Biochemical Warfare threat, treatment agents available to units, plans for the employment of those treatments.

B.6) **IEW** is the electronic warfare section. This section would normally deal with radar jamming and the like. IEW portions aren't often supplied in either written or Annex form.

Alternative Sources to Concept of Operations sub-paragraphs:
- Execution Matrix -- Paper Data (not all BOS units will be listed)
- Graphics Database (Selected OPORDs available in this database)
- TF level AAR Tapes
- THP (Paper or Digital versions)

C. The long list in the format example on page 7 makes up the **Sub-unit Instructions**. Actually, the length of the list depends upon the number of units a Task Force retains. If provided, the commander will list each sub-unit's battle instructions by unit, instead of the chronological priority employed in the Scheme of Maneuver. But more often than not, the commander leaves this portion out, assuming the Execution Matrix and Scheme of Maneuver sufficient for successful execution of the mission (when Sub-Unit Instructions are presented in matrix form, the information should be identical to the Execution Matrix).

Paragraph Four: Service Support

Service Support is divided into six sub-paragraphs

A. **General**: you can expect to find a very brief description of locations and movements of Field and Combat transports and where they will move on order. Reference to CSS annex is typical.

B. **Material**: classes and quantities described here with collection and forward service point locations.

C. **Medical Evacuation**: covers classes of services plus locations of hospital services and casualty collection points.

D. **Personnel**: lists location of CSS personnel. The example OPORD refers you to Annex I.

E. **Civil-Military Cooperation**: -- mainly JRTC OPORDs. Provides civilian collection points, special orders and times, plus personnel in charge of civilian related problems.

F. **Miscellaneous**: contains any additional pertinent remarks.

Alternative Sources for CSS information:
- THP
- AAR Slides and/or Tapes

Paragraph Five: Command And Signal

This section is comprised of two parts:

A. **Command**: Location of Commander and TOC will be given here, also chain of command.

B. **Signal** (sometimes called Communication): lists CEOIs/SOIs in effect during phases of mission. Also lists significance of visual/physical signals.

Practical Exercise 2:
Extract Data from a Standard OPORD

Use the various Annexes to provide answers to the questions below. If you have questions contact a facilitator.

1) Where should the CBT and FLD Trains be located at start of mission?

2) What Enemy reconnaissance activity has been detected?

3) Which team has been directed to look for DRTs during the intelligence acquisition phase?

4) Which Team will secure the Task Force's left flank?

5) Where can units pick-up CL IV materials (plywood and sand bags)?

Compare your answers to the Feedback on the next page.

Feedback to Practical Exercise 2:
Extract Data from a Standard OPORD

---

1) Where should the CBT and FLD Trains be located at start of mission?

   CBT Trains: 590 092; FLD Trains: 605 165 (found in annex J)

2) What Enemy reconnaissance activity has been detected?

   The 210th MRR Recon CO currently deployed along 09 N-5 grid line. Elements from the MRD Recon along 23 N-5 grid line. (Annex A)

3) Which team has been directed to look for DRTs during the intelligence acquisition phase?

   Team A will look for DRTs on their Southern Flank

4) Which Team will secure the Task Force's left flank?

   TM A (found in commander's Intent)

5) Where can units pick-up CL IV materials (plywood and sand bags)?

   NLT 011700, location Ruba, HHC Motor Pool.(CSS Annex)

If your answers match those above, move on to the next section. If you have any questions, ask a facilitator or colleague now.

Part III: Accessing Data from Overlays

The production and quality of Overlays varies from mission to mission and from TF to TF. The term Battle Field Graphics is synonymous with the term Overlay, except that Overlays are purely unit-generated, whereas "graphics" may refer to either unit generated overlays or to OC/TAF generated computer instrumentation graphics. Of the former the CTC Archive receives most overlays produced during any given rotation. This applies to all CTCs, although some are lost and others damaged in the fast-paced training center environments. Like OPORDs, Overlays will not differ significantly form CTC to CTC. Overlays are produced primarily on acetate, although for NTC blue-print style overlays accompany the OPORD.

For each annex of the OPORD a corresponding overlay will ideally be produced. This module covers the most common of these:

- The Situation Template
- R & S Plan
- Operations Overlays-Offensive
- Operations Overlays-Defensive
- Engineers (entitled Obstacles or MCMS)
- CSS
- Fire Support/Field Artillary

FM 101-5-1, entitled <u>Operational Terms and Symbols</u>, provides additional information on the symbols and terms used in both OPORDs and Overlays. You may sign-out this document from the Technical Reference Library.

Situation Template

Carefully unfold the Situation Template. The Situation Template depicts the known and expected position of enemy forces (usually at the echelon of platoon). In the example, the enemy is expected to move north, northwest of their currently estimated positions. Features of the map include:

- Grid Coordinates
- Observation Post (Small Triangle)
- MRL Lines (Multiple Rocket Launcher, Numbers Denote Size Of Warhead)
- Enemy Units (Semi-Circle, Three Dots Denotes Platoon)
- Obstacles

The R&S Plan

A Reconvenes and Surveillance Plan will chart the following minimum information:

- Observations Posts
- Named Areas Of Interest (NAIs)
- Engagement Areas (EAs).

Operations Overlays-Offense

After the S2 compiles and presents the Enemy Situation, the S3 plans his maneuver. The product of this effort is the Operations Overlay and the OPORD. The Operations Overlay is the graphical equivalent of the Maneuver portion of the OPORD. In it you are provided the maneuver routes, names of Phase-lines, Battle Positions, Objectives, and Engagement Areas. Some Operations Overlays will even include support information such as CSS. At a minimum you should see the following features:

- Boundary Lines
- Phase Lines
- Line Of Departure/Line Of Contact
- Axis Lines
- Routes
- Battle Positions
- Objectives
- Engagement Areas

Practical Exercise 3:
Confirm Data between Overlays

Using the Grid coordinates on both Overlays, match-up the R&S Plan with the Situation Template.

1) PL Wieler on the R&S Plan seems to correspond to which feature of the of the Situation Template

2) Marry-up the Situation Template, R&S Plan, and the Operations Overlay. If the first two have been done correctly, adding the Operations Overlay should be easy. Just match-up EAs. After you have done this, what does Objective Tiger appear to correspond with on the R&S Plan?

3) Objective Rattler seems to correspond to what feature of the Situation Template.

4) The TF Commander wrote in an Objective in pencil named Warrior. What does it correspond to on the R&S Plan.

Compare your answers to the Feedback on the next page.

Feedback for Practical Exercise 3:
Confirm Data between Overlays

Using the Grid coordinates on both Overlays, match-up the R&S Plan with the Situation Template.

1) PL Wieler on the R&S Plan seems to correspond to which feature of the of the Situation Template

   The 122-mm event Area boundary line

2) Marry-up the Situation Template, R&S Plan, and the Operations Overlay. If the first two have been done correctly, adding the Operations Overlay should be easy. Just match-up EAs. After you have done this, what does Objective Tiger appear to correspond with on the R&S Plan?

   #20 on R&S Plan

3) Objective Rattler seems to correspond to what feature of the Situation Template.

   An Enemy CSO (the center-most one)

4) The TF Commander wrote in an Objective in pencil named Warrior. What does it correspond to on the R&S Plan.

   Objective Warrior corresponds to #23 on R&S Plan

If your answers match those above, move on to the next section. If you have any questions, ask a facilitator or colleague now.

The Following Overlays will be used for your Skills Assessment. But because they depict a defense as opposed to the offensive mission previously described, the Overlays will look very different. You will notice that the Overlays included in the paper package include an Operations Overlay, an Engineering and a CSS Overlay. No Situation Template or R&S Plan was provided, presumably because this mission was one in a series of missions for which the Intel had in a previous mission submitted its data.

Look at the Overlays while considering their features listed below.

Operations Overlay-Defense

- FEBA (Forward Edge of Battle Area)
- FLOT (Forward Line of Troops).
- Engagement Areas
- Battle Positions
- Battle Position
- TOC, TAC
- Combat and Field Trains

Engineer Obstacles Overlay

- Wired Obstacles.
- Mines
- Expected Enemy Movement Around Obstacles

CSS Overlay

- MSR Main Supply Route. This is the main feature of the CSS Overlay
- MAIN SUPPLY POINTS for the CBT(Combat) and FLD(Field) Trains.
- FAS (Forward Aid Station)
- MAS (Main Aid Stations)
- Alternate Stations
- NBC Nuclear, Biological, and Chemical warfare decontamination sites

Now go on to the Skills Assessment on the next page.

Access Data From OPORDs and Overlays:
Skills Assessment

Using OPORD 92-07-6 and its accompanying overlays answer the following questions:

1) Provide the Mission Statement:

2) According to the Fire Support Annex, which CO or Team is given priority fire?

3) From the Fire Support Annex, which CO or Team is given priority fire?

4) What is the Survivability priority for the Engineers?

5) Provide Field Trains location:

6) Which Team conducts a counter-recon during Phase 1 of the Execution Matrix?

7) What are enemy courses of action according to the OPORD?

8) Name BPs between PLs France and Sedan in order from North to South.

Go on to the next page for Feedback on your Skills Assessment.

Access Data from Paper Take-Home Package

Purpose: This module covers the format of feedback to units through the paper take-home package (THP). The skills involved in extracting data from THP are required in collecting data for most research issues. The information about the various formats is especially important if you plan to collect data from more than one CTC.

Resources:

- Facilitators who will help with basic procedures with the tools.

- Subject Matter Experts who will answer questions about procedures at the CTCs.

- Excerpts from THPs from each CTC:

    NTC--Battalion Task Force, Mechanized Infantry, 90-06
    JRTC--Battalion Task Force, Company/Battery/Platoon, 92-04
    CMTC--Battalion Task Force, 92-06

- Archive of THPs

Estimated Time To Complete: 30 minutes

Certification: You will show a facilitator a summary of comments related to your issue drawn from a THP from each CTC.

How To Proceed: You have the option of completing the skills assessment without working on the full module. If you decide to work on the full module, you will have access to excerpts from each of three THPs. We encourage you also to review the full THP.

Performance Objective: Using a Take-Home Package from each CTC, extract performance information and battle damage assessment data related to a research issue.

Skills Assessment: The skills assessment is on the next page. You will be working with your issue.

September 12, 1992

Access Data from Paper Take-Home Package

Skills Assessment

Write your issue below:

Go into the archive and select a take-home package (THP) from each CTC. In each THP, find one comment related to a BOS or a finding based on statistical data that illuminates your issue. Describe each comment in the chart below.

CTC	Rot.	Echelon	Mission (or Trend)	BOS	Comment
NTC					
JRTC			Trend		
CMTC					

Take the chart and the relevant THPs to one of the facilitators.

January 13, 1993

Access Data from Paper Take-Home Package

There are two primary sources of Performance Feedback developed specifically for the unit in future training--the Take Home Package (THP) and the video after-action review (AAR). This module focuses on the THP.

The THP is a comprehensive feedback document for units that train at the CTCs. This document is developed by the Observer/Controllers (OCs) for each rotation. The THP includes a narrative description of unit performance trends, strength and weaknesses, lessons learned, and training recommendations. The THP contains a wealth of information and usually can answer the 'whys' of the training events and outcome. The THP narratives are most valuable when they are supplemented by other data such as digital data, Operation Orders, and AARs.

The THP is an evolving document. The volume of data represented in the THP has increased and the format and structural contents have changed in response to the Operations Groups' intent to improve feedback on unit performance. In this module we give an overview of recent THPs from each CTC. Recognize, however, that there will be variations even within each CTC.

Access data from NTC THP

The NTC THP typically covers six elements:

Armor (A) Task Force
Mechanized (M) Infantry Task Force
Forward Support Battalion (FSB)
Aviation (AVN)
Field Artillery (FA)
BDE operations

The THP in the archive is kept in two or three binders. The label on the side of the binder identifies the following:

DIV and TF ID (e.g. 197th INF BDE TF 1-18 AR)
Rotation number (e.g. 92-10)

We will work with the THP for the Mechanized Infantry Task Force in Rotation 90-06. Get a copy of that THP from the resource table.

The typical format for the NTC THP is shown in Table 1. Browse through each section to see the type of information it contains. Then work Practical Exercise 1, which will ask you to locate information related to a BOS.

Table 1. Format for NTC Take-Home Package

Section	Contents
Executive Summary /Trends	• Overall performance. • Trends and training recommendations by BOS.
Mission Statements	• OC description. • Direct quote from Commander (now).

Battlefield Operating System Lessons Learned	• By BOS.
	• For each mission:
	    - Performance within BOS by phase (Prepare, Plan, Execute).
	    - Lessons Learned for each BOS.
	• Force on force missions followed by live fire.
	• NCO Support and Individual Skills (if included) after BOS.

Company/Team Operating Systems and Lessons Learned	• By Company. • Comments for each mission by phase and Lessons Learned.

Battle Statistics	• Covers force on force missions.
	• Three parts per mission:
	    - Task Force losses broken out by OPFOR weapons.
	    - Company/Team losses.
	    - Weapon systems that caused OPFOR casualties.

Practical Exercise 1: Extract BOS Comments from NTC THP

1. What are the subdivisions for feedback on the Intelligence BOS?

_____

2. How did the quality of the graphic control measures affect the Maneuver BOS in the Night Attack conducted by TF 1-18 on 8-9 Mar 90?

_____

Check your answer on the next page.

Answers to Practical Exercise 1

1. What are the subdivisions for feedback on the Intelligence BOS?

> *S2 and Scout Platoon.* [If you are interested in Scouts, you might enjoy the feedback on the Deliberate Attack (p. III-A-5).]

2. How did the quality of the graphic control measures affect the Maneuver BOS in the Night Attack conducted by TF 1-18 on 8-9 Mar 90?

> (Found on page III-B-5) *Graphic control measures lacked sufficient detail to control fire and maneuver.*

Besides containing BOS specific comments, the NTC THP contains valuable statistical data. These battle statistics--typically called Battle Damage Assessment (BDA)--provide the most comprehensive representation of battle outcomes available. The instrumented data in the mission databases can provide insight on selected cases (for example range for an engagement), but only about 10% of the engagements captured in the digital data have a known firer and target. Any analysis of lethality and survivability should include the battle statistics as reported by the OC. Practical Exercise 2 gives you a chance to extract data from those statistics.

Practical Exercise 2: Access Data from Battle Statistics

Refer to the table for Deliberate Attack, 4 Mar 90 on page V-2.

1. What was the survivability of tanks and M113s of the BLUFOR for the mission?

	start	lost	end
Tank			
M113			

2. How many direct fire fratricides were incurred for the TF and by which system(s)?

3. What OPFOR weapon killed the most M113s? _____

Check your answers on the next page.

Answers to Practical Exercise 2

1. What was the survivability of tanks and M113s of the BLUFOR for the mission?

	start	lost	end
Tank	28	28	0
M113	56	42	14

2. How many direct fire fratricides were incurred for the TF and by which system(s)?

2 M1 fratricides

3. What OPFOR weapon killed the most M113s?

RPG (Rocket Propelled Grenade) inflicted 11 casualties on M113s.

Access data from JRTC THP

The typical format for the JRTC THP is shown in Table 2. The emphasis in that THP is on trends exhibited throughout the rotation. As a result the missions and battle statistics are not addressed systematically. Get the copy of the extract for JRTC Rotation 92-04 and note the various forms the feedback takes.

Table 2. Format for JRTC Battalion Task Force THP

Annex	Contents

Task Force Trends	• Comments grouped by BOS.
	• Typically includes:
	    Critical tasks.
	    Unit strengths.
	    Areas in need of improvement.
	    Training recommendations.
	• May include mission summary.
	• Battle statistics for selected units may be integrated with BOS.

Company/Battery/Platoon Trends	• Comments grouped by unit.
	• Typically includes:
	    Critical tasks.
	    Unit strengths.
	    Areas in need of improvement.
	    Training recommendations.

Though the format for the JRTC THP is different from the NTC THP, the BOS comments are similar. Practical Exercise 3 illustrates that similarity.

Practical Exercise 3: Extract BOS Comments from JRTC THP

1. For what subordinate units (Company/Battery/Platoon) are battle statistics reported?

_____

2. What page describes the quality of Preventive Maintenance Checks and Services (PMCS) in the Battalion Task Force during the rotation? (PMCS typically falls in the CSS BOS.)

_____

Check your answers on the next page.

Answers To Practical Exercise 3

1. For what subordinate units (Company/Battery/Platoon) are battle statistics reported?

The Mechanized Company Team (p. H-29 to H-31)

2. What page describes the quality of Preventive Maintenance Checks and Services (PMCS) in the Battalion Task Force during the rotation? (PMCS typically falls in the CSS BOS.)

Page G-23, Areas in need of improvement (PMCS was almost nonexistent.)

Access data from CMTC THP

CMTC produces a very comprehensive THP. The format for that THP is shown in Table 3. We have copied an excerpt from CMTC rotation 92-06 so you can see examples of the format, but you should look at the full binder to see how much raw information is included. Note especially the extensive information collected about fratricides.

Table 3. Format for CMTC THP

Section	Contents
Mission Summary	• General information: Enemy situation, friendly situation, mission statement, CDR's concept. • Description of performance by BOS. • Synopsis of the operation. • Battle statistics. • Strengths and weaknesses by BOS.
Mission AAR Sheets	Hand-written OC observations by BOS.
Operations Orders	Includes FRAGOs and graphics.
AAR Slides	Points emphasized in AAR for mission.
Fratricide Checklist	Description of fratricide and contributing factors (e.g., weather).

One of the distinctive features of the CMTC THP is that topics are systematically covered in the Description of Performance section. Therefore, if you study a BOS, you should look in that section as well as Strengths and Weaknesses. Practical Exercise 4

demonstrates the relation between those sections plus the type of battle statistics available from CMTC.

Practical Exercise 4

1. Where is the distribution of engineer assets described for the Attack on 8 Jun?

    A. Friendly Situation (p. 1).
    B. Description of Mobility/Survivability (p. 9).
    C. Strengths and weaknesses of Mobility/Survivability (p. 17).

2. What was the effect of the distribution of engineer assets?

_____

3. Which of the following questions can be addressed from the CMTC battle statistics? (Circle all that apply.)

    A. How many Enemy T80s were killed in the Attack?
    B. How many Enemy T80s were killed by Task Force M1A1s in the Attack?
    C. How many Task Force M1A1s were killed in the Attack?
    D. How many Task Force M1A1s were killed by Enemy T80s in the Attack?

Check your answers on the next page.

Answers to Practical Exercise 4

1. Where is the distribution of engineer assets described for the Attack on 8 Jun?

   B. *Description of Mobility/Survivability (p. 9).*

2. What was the effect of the distribution of engineer assets?

   (P. 17) No team had enough engineer strength to break through or erect obstacles.

3. Which of the following questions can be addressed from the CMTC battle statistics?

   A. *How many Enemy T80s were killed in the Attack?*
   C. *How many Task Force M1A1s were killed in the Attack?*

Table 4. Precautions for Interpreting THP Data

Take-Home Packages are the most widely used and probably most valuable source of information about performance at the CTCs. While they are very valuable, you need to keep three precautions in mind when you work with THPs:

• The observations reflect biases of the particular OC. OCs are experts, but even experts have different perspectives. One may focus on the planning phase, perhaps on a particular product; another may stress actions during the execution phase.

• Comments stress areas for improvement. Therefore even effective units may appear, on first reading, to be weak in every area. Even if you are studying only one unit, read several THPs to set a context for interpreting the comments.

• Be careful about extending casualties from the BDA Tables to the full force in actual combat. One reason for caution is that the Rules of Engagement (ROE) for determining casualties may not be fully realistic. (If you are from the proponent for a weapons system, review the ROE.) Another reason for caution is that battles at the CTCs often run past points where commanders would normally withdraw. This may exaggerate the extent of casualties.

For the skills assessment, you will need to extract information related to your issue from THPs at each CTC. Do that now.

Access Data from After Action Review (AAR) Video Tapes

Purpose: The After Action Review (AAR) tapes are one of the primary data sources of unit training feedback at the CTCs. This module will take you through the steps from selecting an appropriate video for a given issue to finding some pieces of information on the tape.

Resources:
- AAR Video Tapes
- Video cassette players (VHS & Umatic)
- Facilitators who will help with basic operation
- Subject Matter Experts who will answer questions about procedures at the CTCs.
- CTC AAR Catalog

Estimated Time To Complete: One hour

Certification: You will check answers against a Feedback Sheet then show your results to a facilitator.

How To Proceed: The module has a Skills Assessment. You have the option of completing the Skills Assessment prior to working on the full module. If correctly completed, you may skip the rest of this module. The testing out option may only be granted by facilitator.

Performance Objective: From a given set of After Action Review (AAR) tapes be able to select and extract information from appropriate AAR video tape(s) to address a given unit type and Battlefield Operating System (BOS) and, briefly outline the structure of the AAR.

Skills Assessment: The Skills Assessment is on the next three pages. You will select one of the three assessments.

April 22, 1993

Access Data from After Action Review (AAR) Video Tapes

Skills Assessment

Three skill assessments have been developed, from which you will **select one,** based on your area of interest. The AAR tapes for the three exercises focus on:

(A) Combat Service Support operations (CSS)--heavy units
(B) Fire Support (FS)--heavy units
(C) Task Force (TF) operations--light units.

Use only the skills Assessment for the letter you select:
Skills Assessment A   (page 3)
Skills Assessment B (page 4)
Skills Assessment C (page 5)

Skill Assessment (A):

1. Go to the video workstation A. Provided on the shelf of the video equipment are a set of tapes. Given the following AAR video tapes, select the tape(s) you would use to find information on Combat Service Support (CSS) operations for heavy units.

(You may need to refer to Tab C of your workbook for information on the type of units trained at each CTC as an aid to answering this question).

For the tape(s) you have selected, look on the box of the tape(s) and write down the following ID information:

CTC   Rotation   Echelon   Date

2. Some AARs may be recorded on more than one tape. You have been given only the first tape of the set (i.e. 1 of 4). Load the earliest dated AAR tape on the appropriate video machine. Rewind the tape fully and reset the counter. Listen to the first 5-minutes or so of the tape and briefly outline the agenda of the AAR as described by the Observer/Controller (O/C) conducting the AAR.

Outline of AAR Agenda:

3.   Listen to the 7 minute summary (counter 01:24) and answer the following questions regarding "What Happened".
     a. Departing time of quartering party:
     b. Arriving time of trailing party:
     c. What was the first combat team's mission on training day 1?
     d. What was the commander's intent?

     e. What is the initial combat power for TF 2-12?

     f. What is the final combat power for TF 2-12?

4. Go to counter 17:55 identify what they are using to defend the BSA?

Skill Assessment (B):

1. Go to the video workstation B. Provided on the shelf of the video equipment are a set of tapes. Given the following AAR video tapes, select the tape(s) you would use to find information on Fire Support (FS) operations for heavy units.
   (You may need to refer to Tab C of your workbook for information on the type of units trained at each CTC as an aid to answering this question).

For the tape you have selected, look on the box of the tape and write down the following ID information:

CTC   Rotation Echelon BOS Date

2. Some AARs may be recorded on more than one tape. You have been given only the **first** tape of the set (i.e. 1 of 4). Load the tape(s) on the appropriate video machine. Rewind the tape fully and reset the counter. Listen to the first 5-minutes or so of the tape and briefly outline the agenda of the AAR as described by the Observer/Controller (O/C) conducting the AAR.

Outline of AAR Agenda:

3. Go to counter number 35:03. According to the unit, why was FASCM planned but not used?

December 6, 1992   4

Skill Assessment (C):

1. Go to the video workstation C. Provided on the shelf of the video equipment are a set of tapes. Given the following AAR video tapes, select the tape(s) you would use to find information on Task Force (TF) operations for light units.
   (You may need to refer to Tab C of your workbook for information on the type of units trained at each CTC as an aid to answering this question).

For the tape you have selected, look on the box of the tape and write down the following ID information:

CTC   Rotation   Echelon   Date

2. Some AARs may be recorded on more than one tape. You have been given only the **first** tape of the set (i.e. 1 of 4). Load the tape(s) on the appropriate video machine. Rewind the tape fully and reset the counter. At counter number 00:45 listen to the first 5-minutes or so of the tape and briefly outline the agenda of the AAR as described by the Observer/Controller (O/C) conducting the AAR.

Outline of AAR Agenda:

3. Go to counter 17:45. The senior trainer begins a discussion on the planning process--what the plan was vs. what actually happened on the ground. He shows a diagram of the process used at the ISB. How did the O/C's perspective of the unit's deliberate planning process compare with the XO's perspective?

Access Data from After Action Review (AAR) Video Tapes

There are two primary sources of *Performance Feedback* developed specifically for the interest of the unit in training--Take Home Package (THP) and the After Action Review (AAR). This module focuses on the AAR.

The AARs provide a comprehensive summary of the battalion's training performance. The AAR is the most immediate type of feedback given to units on their training, besides individual comments made by the O/Cs from time to time. The major objectives of the AAR are outlined in the chart below.

After Action Review Objectives
Identify and highlight actions and events by each primary area of responsibility critical to the mission outcome.
Examine course of action to note deviations from original plans using a participatory method vs. lecture for generating an improved course of action to follow for subsequent missions.
Analyze effectiveness of major BOSs on basis of critical points.

Utility of AARs

Much of the unit performance feedback captured in the AAR provides insight into key points of the battle for the particular unit being reviewed. If used in conjunction with the instrumented data (mission databases and replay tools) AARs will address the qualitative issues--what exactly occurred and why, as reflected by the unit as well as from the O/Cs observing the training. AARs provide information about how the mission was conducted, problems encountered, and overall performance feedback for corrective training.

Types of AARs Conducted

The CTCs conduct several different AARs primarily after each mission as shown in the table below.

Type of AAR
Brigade
Task Force
Field Artillery
Aviation
Forward Support Battalion

CTC training is based on Task Force level missions. An AAR is conducted after each TF mission for force-on-force and live fire exercises. The **approximate** number of missions conducted at NTC, JRTC, and CMTC are 7, 5, and 3, respectively. Subordinate units typically receive the same number of AARs as their higher headquarters, e.g., infantry platoons receive an AAR after each mission. All AARs conducted in the AAR van are taped (TF and BDE). The company and platoon level AARs are conducted in the field and **only some** are taped. Therefore, the company and platoon AARs on video are a partial representation of the total AARs actually conducted at the CTC.

As an example:

NTC conducts 7 missions

Type of AAR	AARs Conducted	AARs Filmed
TF	7	7
Company	28	14
Platoon	84	8
TF CSS	3	3
Scout	6	0-1

Special AARs In addition to the AARs listed for the main echelons, the CTCs conduct "special" AARs that are more specific to the BOSs.

-Back Brief by the Commander of the Operations Group (COG)
before live fire exercises (LFX) for each TF
-TF CSS
-Scout platoons
-NBC
-Engineers
-Final AAR (summation of all missions)

Of the three CTCs, the NTC has the greatest volume of AAR video tapes (Umatic and VHS tapes) followed by JRTC and CMTC. The duration of the AAR tapes run anywhere from one to two hours.

AAR Structure

Generally speaking, the structure of the AAR is organized by the seven BOSs, battle phase (plan, prepare, and execute), and key events, as illustrated in the table below. Company and platoon AARs are rarely organized by BOS.

General Format of Mission AARs
Battle Phase: Plan, Prepare, Execute
7 Battlefield Operating Systems
Key Events

The AARs aim to serve three points:

o   **What Happened**
o   **Why It Happened**
o   **How to Fix Deficiencies**

The next set of practical exercises will demonstrate an area of the AAR covering each of these three points.

Below are a set of procedures for loading a video tape on VHS and Umatic cassette players. Refer to the appropriate procedure as needed for the exercises and skill assessment. The key distinction is whether you use the VHS player or the Umatic. The Umatic takes the 3/4 inch cassetes. Tapes from NTC rotations before 9204 are in the Umatic format. At this point turn to the next page and begin the exercises.

Loading Procedure for VHS Cassette Player

1. Go to one of the five video workstations (see map).
2. You will find a T.V. and a VHS and a umatic video cassette recorder.
3. Select the appropriate 1/2" VHS tape.
4. Turn the T.V. switch to "on" and the channel to "3".
5. Turn the VHS player to "on" and the AB switch near the side of the T>V> to 1/2".
6. Place the tape into the machine.
7. Insure that the tape is at the start; rewind <Rew/ > to the beginning.
8. Press the play button. The AAR will start after the first few seconds of the colored graphics.
9. Use the FF/ Fast Forward, Rew/ and stop button as needed.

Loading Procedure for Umatic Cassette Player

1. Go to one of the five video workstations.
2. You will find a T.V. and a VHS and a umatic video cassette recorder.
3. Select the appropriate 3/4" Umatic tape.
4. Turn the T.V. switch to "on" and the channel to "3".
5. Turn the Umatic player to "on" and the AB switch near the side of the T.V. to 3/4."
6. Place the tape into the machine.
7. Insure that the tape is at the start; rewind to the beginning.
8. Use the stop, FWD (Forward) and REV (Review) buttons as needed. The search FWD and REV keys can be used while viewing what is on the screen.
9. This machine has a counter which makes marking and locating sections of the AAR exact.

Extract Information from the AAR Tapes

      The purpose of this exercise is to show you how to identify the ID of an AAR tape, load it onto a cassette player, scan and locate sections of the AAR, and extract pieces of information.

Use a video workstation. For Practical Exercises **1-4 use the "Practical Exercise" tape** on the video workstation shelf. Load the tape using the procedure for loading a Umatic video cassette.

<center>Practical Exercise 1</center>

1. Identify tape ID on label. Look for labels on the narrow back side, top, and bottom of the box. The tape itself is also labeled. Write in your answers.

        OC:
        #:
        TF:
        Mission:
        Date:
        Rotation:

2. Ensure the tape is fully re-wound. Reset the counter (00|00). Fast-forward the counter time to 3|40. Listen to the tape and write down what the AAR "NTC Methodology" is as discussed by the senior O/C (trainer).
        NTC Methodology:

<center>Practical Exercise 2: AAR section on "What Happened"</center>

The *7 Minute Mission Summary Tape* is an objective review of key events of the entire battle from a CTC analyst's perspective. This exercise will have you view the 7 Minute Mission Summary tape and extract some of the information.

1. Go to the beginning of the 7 Minute Mission Summary Tape (counter= 6|12). Locate the screen on Task (Force) Organization and write down the counter number; identify how the TF is organized. To freeze a frame use "pause" button.

      a. Counter number:
      b. TF Organization:

2. Go to the beginning of screen "battle summary" of the 7 minute summary tape (counter= 9|56), what is the TF initial combat power?

Answers for Practical Exercise 1

1. Tape ID--Label
   OC: *COL Scull*
   #:   *1 of 2*
   TF: *2-87 IN*
   Mission: *DIS, Defend in Sector*
   Date: *14 Dec 91*
   Rotation: *92-03*

2. NTC Methodology
   - *What happened?*
   - *Why it happened?*
   - *How to improve/sustain performance*

Answers for Practical Exercise 2.

1. TF Organization
   a. Counter number (beginning time) *7|02* (ending 7|12)

   b. Task (force) Organization:

A CO	*TM B*	*C CO*	*E CO*	*TF CONTROL*	
3 INF	*1 BFV*	*3 INF*	*3 TOW*	*-Scout*	*-ADA*
1 BFV	*1 Tank*			*-Mortar*	*-Transp*
				-Engineers	

2. TF Initial Combat Power:
   4 Tanks   11 TOWS   3 BFV SQDS
   8 BFV   13 INF SQDS

Practical Exercise 3: AAR section on "Key Issues of the Mission"

This exercise will focus on a section of the AAR which identifies a key issue. Go to counter number 38|29. Listen to the next 3 minutes of the AAR discussion. What does the Sr. Trainer consider were two key issues for this battle (shown on AAR slide).
Answer is on next page.

Key Issues:

1.

2.

Practical Exercise 4: AAR section on "How to Fix Deficiencies"

Go to counter number 53:00 on the AAR tape. The key issue in this discussion was an inability to locate and emplace all the available barrier material and mines. What does the Task Force commander offer as a solution?

Answers are on next page.

Answer to Pratical Exercise 3.

Key Issues:
  o *Preparation of Battlefield (fighting positions & defensive sketches)*
  o *Massing Combat Power*

Answer to Practical Exercise 4.

TF commander's solution:
  o *Insure that mines and barrier materials are delivered to the correct place since there are insufficient resources to relocate mines/barrier materials.*

Practical Exercise 5

1. Work with a partner on this exercise.
2. Go to the AAR section of the arhcive.
3. Each of you will select one AAR tape (one which pertains to your BOS or research area) using any of the 3 CTCs and for any date available.
4. Selection of an AAR can be facilitated by using the AAR catalog from TRACS, however, the catalog listing is not fully represented in the catalog at this time. You do however have sample listings for the following rotations:

   NTC: 9203, 9204   CMTC: 9201-9203   JRTC: 9205, 9206

5. Using the AAR listings select a rotation from one of the three CTCs. The headings which will help you are organization, echelon, content, data, and mission_id. The shelves for the AAR tapes have accession numbers identified along the bottom row.
6. Refer to the procedures for loading a video cassette tape as needed.
7. Scan through the AAR for approximately 10-20 minutes for each tape. Identify the tape ID and the general organization of the AAR.

   a. Tape ID: _____

   b. AAR Organization:

   _____
   _____
   _____
   _____

6. Write your issue and identify two benefits of the AAR in addressing your issue. Discuss findings with your partner.

   Issue/BOS: _____

   _____

   Two Benefits of AAR for addressing your issue/BOS:

   1)

   2)

Create Charts Using the Freelance Software Package

Purpose: This module covers the basics of creating graphic representations of data. The skills involved are useful in presenting the data in a concise and visually stimulating manner.

Resources:

- Combat Analyst Work Station with Freelance Software package.

- Facilitators who will help with basic procedures.

- Freelance documentation.

Estimated Time To Complete: 2 Hours.

Certification: You will check your charts against a Feedback Sheet and then show your results to a facilitator.

How To Proceed: The module has Practical Exercises and a Skills Assessment. You have the option of completing the Skills Assessment prior to working on the full module if you feel that you have the requisite skills to complete it correctly. If the Skills Assessment is correctly completed, you may skip the rest of this module, otherwise, first complete the Practical Exercises, and then complete the Skills Assessment. Permission to skip the Practical Exercises may only be granted by a facilitator.

Performance Objective: Using the Combat Analyst Workstation, the required software package, and any required documentation, create a chart with the required data.

Skills Assessment: The Skills Assessment is on the next page. You will be working with data from the BDA database.

1

Skill Assessment:

Using data from the tables on this page, which were derived from the BDA database, create a chart which represents the number of OPFOR losses and target types, attributed to each Blue Force weapons system. The chart must include (1) a heading, (2) a note indicating the source of the data, (3) a note with your initials, (4) X-axis identification, (5) Y-axis identification, (6) specific bar labels, (7) bar values and (8) a legend.

Weapon Type	Weapon Side	Target Type	Target Side	Lost
1	B	1	O	4
1	B	2	O	4
1	B	3	O	1
2	B	1	O	1
4	B	2	O	3
4	B	3	O	2

Weapon Side	Weapon Type	Weapon Description	Target Side	Target Type	Target Description
B	1	Tank (M1A1)	O	1	Tank
B	2	TOW	O	2	AT-3 (BMP)
B	4	25mm Bradley	O	3	73mm (BMP)

Print the chart and take it to one of the facilitators.

Create Charts Using the Freelance Software Package

When you present the results of your research, your audience will pay attention to what you say, they will read your word charts, and they will study any tables of numbers you present. But they will probably remember longest the findings you are able to show visually in a chart. For this reason, the Combat Analyst Workstation includes the Freelance software package. This software allows you to create a wide variety of charts to enhance reports, lectures, and other presentations. It is a simple, easy to use package which creates high quality charts in a minimum amount of time.

Charts are an effective communication device, but too many charts or overly complicated charts will lessen the impact of the data you are presenting. The most effective charts are simple and straight forward. This module covers four formats for such charts:

- **Simple Line Chart**: This chart is well suited for showing changes over time and/or trend studies. Peaks and dips in the line represent indvidual data points; the general shape of the line may show a trend.

- **Bar Chart**: This format is effective for showing only a few data elements to make a point. The choice between line charts and vertical bar charts is somewhat subjective but many time periods would clutter a vertical bar chart.

- **Clustered Bar Chart**: This format is effective for showing related groups of items.

- **Bar-Line Chart**: This chart combines features of line and bar charts.

In this module you will create, save, export, and print these four chart types.

All four practical exercises in this module are based on the information in Table 1. The table shows task force strength at the start and end of six force on force missions at NTC. The column labeled BSTART contatins the number of combat vehicles (M1 and M2) at the start of the mission; BEND contains the number of vehicles that survived the mission. The data are based on performance of a National Guard task force.

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Table 1: Data for Practical Exercises

MISSION NUMBER	MISSION	BSTART	BEND
1	COUNTER-ATTACK	54	11
2	DEFENSE IN SECTOR	49	5
3	DELIBERATE ATTACK	50	7
4	DELIBERATE ATTACK	53	6
5	DELIBERATE ATTACK	52	3
6	HASTY ATTACK	52	39

P.E. 1: Create a Simple Line Chart

Enter Freelance	•Using the mouse, place the cursor on the Freelance Icon and *double click* the left mouse button. •From the Freelance main menu select Charts and Drawings and press the *Enter key*.
Enter the Forms	•From the menu select Chart by pressing the *C key*. •From the Chart menu, select Edit-data by pressing the *E key*.
Select Line Chart	•Press the *Space bar* to get a menu of charts available. •*Use the Up or Down arrow key* until "Line" is highlighted (selected), then press *Enter*.
Enter Headings	•At Heading 1: Type *"NATIONAL TRAINING CENTER"*. Press *Enter*.
Go to Form 2	•Press the *END* key to move your cursor to the NEXT button. Press *Enter*. You should now be at Form 2. If you are not at Form 2, ask a facilitator for assistance.
Label Axes	•At X-axis type *"Mission Number"*. Press *Enter*. •At Y-axis type *"Blue Force Start Strength"*. •Press the *END* key to move your cursor to the NEXT button. Press *Enter*. You should now be at Form 3.

Enter Data	•Type "*1*" in Number of Lines, press *Enter*.
	•Type "*6*" in Points per Line. Press the *Right arrow key* until the cursor is located in Labels 1.
	•In Labels 1, type the first mission number (*1*). Press the *Right arrow key*.
	•In the first Point value type "*54*", the first BSTART value. Press the *Right arrow key* until the cursor is in Labels 2.
	•In Labels 2, type the second mission number (*2*). Press the *Right arrow key*.
	•In the point value type "*49*", the second BSTART value. Continue in the same manner until all 6 Labels and Values are filled in.
Draw the Chart	•Press *F10* to return to the Chart menu.
	•Press *G (Go)*.
	•Press *Enter* to draw the completed Chart.

Turn to the next page and check your chart against the Feedback Sheet.

NATIONAL TRAINING CENTER

Blue Force Start Strength
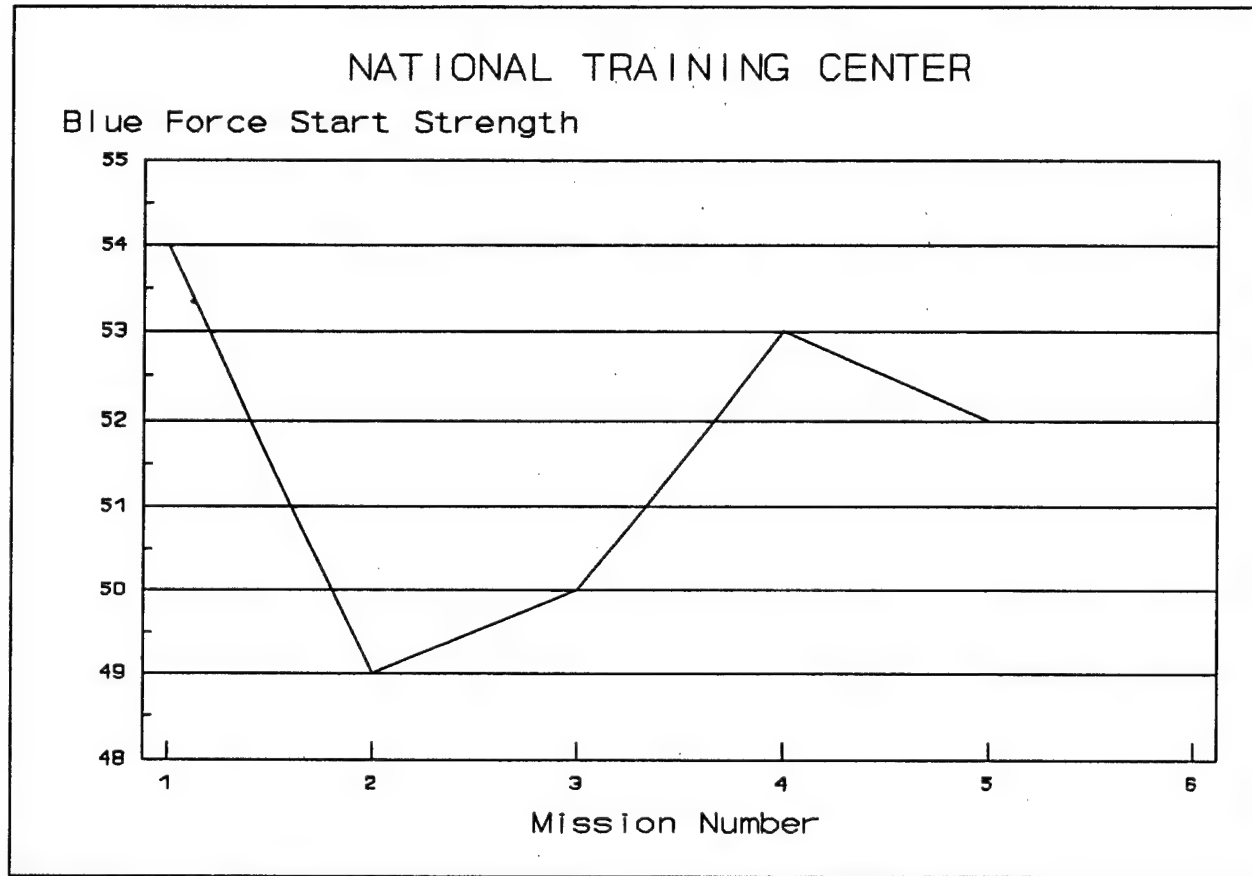
Figure 1:   A Simple Line Chart

If your chart matches the Feedback sheet, continue the module on page 8.   If there is a problem, either repeat the steps or ask a facilitator for assistance.

Overview of CTC Archive Sources

Source	CTC	Purpose	Contents	Precautions
Take Home Package (THP)	NTC CMTC JRTC	OC feedback to units after the rotation	Strengths and weaknesses by BOS, overall (NTC and JRTC) and by mission (NTC and CMTC). BDA. Cdr's concept (NTC and CMTC).	Comments reflect bias of OCs. Tend to focus on areas to improve. Even effective units have predominantly negative comments.
Automated THP	NTC JRTC	Same as THP, in digital format.	Same as THP, files by BOS.	Same as paper THP, plus text may have changed after paper THP was printed. If so, digital is more current.
AAR Slides	NTC CMTC JRTC	OC feedback to units in AARs during rotation.	Strengths and weaknesses by BOS.	Same as paper THP.
AAR Tapes	NTC CMTC JRTC	Videotapes of AARs during rotation.	Battle summary. Discussion of why performance was strong or weak.	Good coverage at task force level, but sparse at company and platoon. Be sure you have right machine for format (recent are VHS, earlier are UMATIC). If no sound, check channel (back of player).
Orders and Graphics	NTC CMTC JRTC	Instructions from TF to subordinate commands for each mission.	OPORD and FRAGO: Intent, 5 para. Annexes. Graphics (paper).	Not all elements are present for all missions. Often cannot tell if not prepared or not collected. Paper is cumbersome.
Digital Graphics	NTC CMTC JRTC	Images of paper orders and graphics.	Subset of paper orders and graphics.	Some orders and graphics unsuitable for digitizing.
Journals	NTC CMTC JRTC	Record of messages and events.	Often includes spot reports and FRAGOs.	

Source	CTC	Purpose	Contents	Precautions
Mission Database	NTC	Data from Core Instrumentation System and Range Data Management System.	Event Tables: **Mission Identification:** Information to identify mission segment. **Fire Event:** Record of each firing. **Pairing Event:** Record of near misses, hits, and kills. When target and firer match, includes ID, whether fratricide, and distance. **Indirect Fire Missions Fired:** Record of all indirect fire missions. Mission can be specified by preplanned number or service request. **Indirect Fire Casualties:** Casualties assessed as result of indirect fire. **Minefield Casualties:** Casualties assessed as result of minefields. **Communications:** Length of commo events (key depressed/released). **Ground Player Location:** Coordinates for each instrumented ground player (basis for replay). **Air Player Location:** Coordinates for each instrumented air player. **Player State Update:** Tracks changes to all players during segment. **Unit State Update:** Changes to units throughout segment. **Control Measure:** Coordinates for phase lines, check pts, etc.	Basic organization only; cross-attachments not up-dated. Only about 10% of firing events match with near miss, hit, or kill. Boresighting exercises may inflate kills. Lack of execution errors (all rounds impact as called) may be unrealistic. Entries are rare. Some grids do not match map—contain extra first digit (120 should be 20). Same as Ground Player Location. Almost always empty. Accuracy subject to Tactical Analyst Facility.

Source	CTC	Purpose	Contents	Precautions
			Static Tables: **Player State** Initialization: Player list at beginning of mission segment. **Unit State Initialization:** OPFOR and BLUEFOR at beginning of segment. **Unit Type:** Describes unit organization. **Player/Vehicle/Weapon Code:** Defines a unique code for each weapon present on battlefield. **IFCAS Target Group:** Pre-planned ind fire and close air target groups.	Active field not used. Status codes: OC Gun Kill: "God gun" for ind. fire, NBC, etc. Admin Kill: TAF action for spurious fire. Mobility Kill: E.G., thrown track. Should check against THP.
BDA Database	NTC CMTC JRTC	Summary of vehicles killed and weapons system that killed each.	Digital format for BDA tables in THP. Allows researcher to cut across missions and CTC.	Subject to realism of ROE.
Battle Replay	NTC	Visual display of player positions on digitized map during battle.	Flow of battle throughout mission. Position of players at 5 minute intervals.	Player data tables are sometimes corrupted (e.g. OPFOR show as BLUEFOR). Obstacles are not drawn for BLUFOR defenses.
Mission Critical Event Sheets	NTC CMTC JRTC	Summary of battle by military analyst.	TF mission statement, TF order, summary of performance, task organization, timeline of battle.	
Audio Tapes	NTC CMTC	Recordings of multiple channels of communication nets.	Communication over each net in each battle.	Quality highly variable. CMTC tapes do not have CEOI. At best very laborious.

Return to the Main Menu	•Press **Enter** to accept the chart. Press **Q (Quit)**. Press **Y (Yes)** to return to the Freelance main menu.

Again use the table on page 3 to complete P.E. 2. This time you will use the BEND data.

P.E. 2: Create a Bar Chart

Enter the Forms	•Select Charts and Drawings by pressing **Enter**. Press **C** to select Chart. From the Chart menu press **E**.
Select Chart Type	•Press the **Space bar**. **Select Bar-Vertical** and press **Enter**.
Enter Headings	•Type **"NATIONAL TRAINING CENTER"** and press **Enter**. Go to the NEXT button and press **Enter**.
Label Axes	•X-axis = **"Mission"**. Y-axis = "**Blue Force End Strength**". Go to the NEXT button and press **Enter**.
Enter Data	•Type **"6"** in Number of Clusters.
	•To display values at the top of each bar, go to the LABELS AND VALUES button and press the **Space bar**. From the specialized menu, **select Display** and type **"Y"**. Go to the DONE button and press **Enter**.
	•At Clusters Label 1 type **"Counter Attack"**; at the bar value type **"11"**; At Label 2 type **"Defense in Sector"**; at value 2 type **"5"**. Continue entering data until all six clusters are completed.
Draw the Chart	•Press **F10** for the Chart menu and select **G (Go)**. Press **Enter** to draw the chart.

NATIONAL TRAINING CENTER

Blue Force End Strength
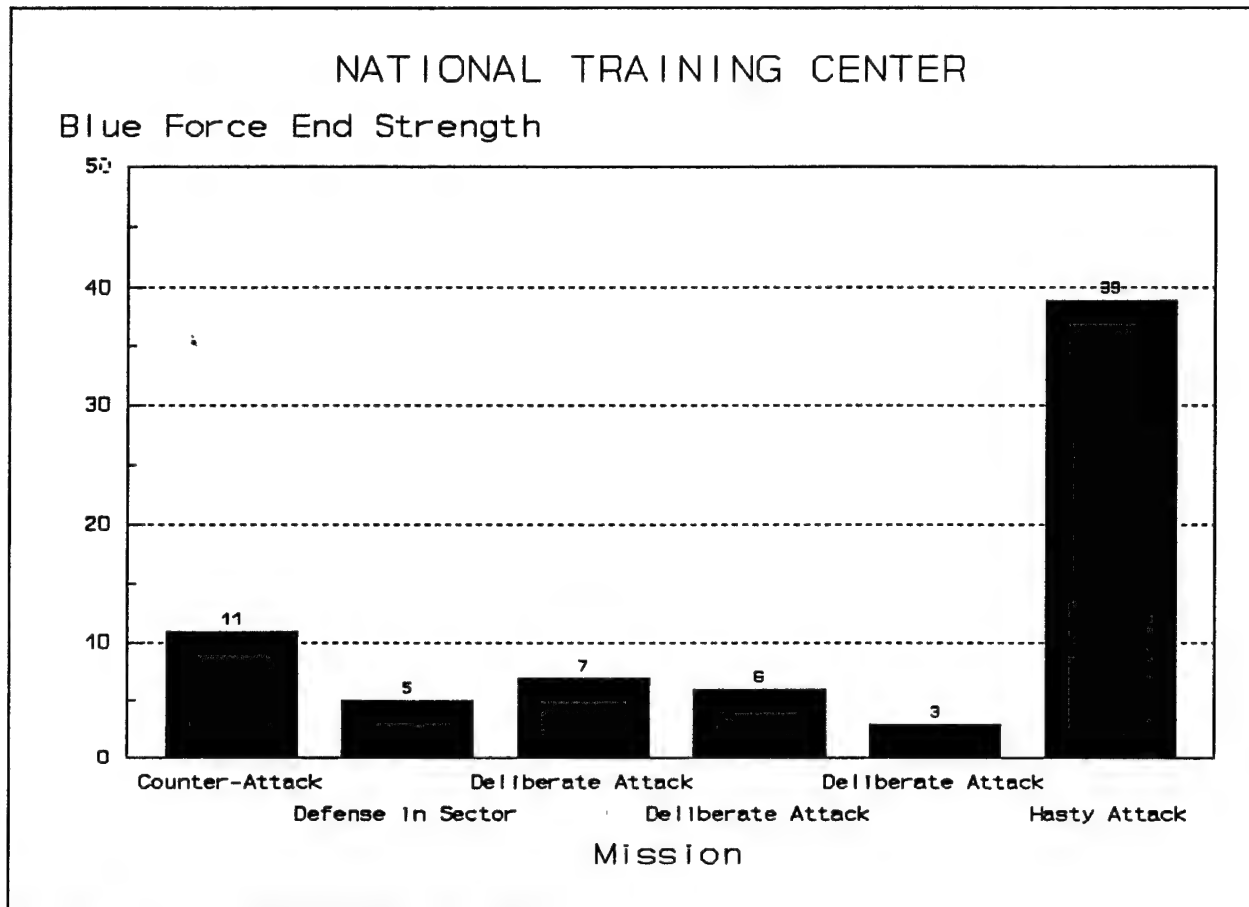
Figure 2: A Vertical Bar Chart

If your chart matches the above, continue the module or ask a facilitator for help.

Save the Chart	•Press **Enter** to accept the chart. From the Chart menu, select **F (File)**. From the File menu select **S (Save)** and **C (Chart)**. Name the chart **VBAR (your Initials)**, i.e. VBARJRG. Press **F10**.
Return to the Main Menu	•Press **Q**, then **Y** to return to the main menu.

Contine the module on the next page.

P.E. 3: A Clustered Bar Chart

Use the table on Page four to complete P.E. 3. You will use the BSTART and BEND data.

Enter the Forms	•*Select* Charts and Drawings. *Select* Chart. *Select* Edit-data.
Select Chart Type	•*Select* Bar-Vertical.
Enter Headings	•Heading 1 is the same as P.E. 2.
Enter a Note	•Note 1 type **"Blue Force was a National Guard unit"**. Go to Form 2.
Label Axes	•X-axis = **"Mission"**. Y-Axis = **"Strength"**.
	•Bars per cluster = **"2"**.
Enter a Legend	•Legend 1 Line One: **"Blue Start"** Line Two: **"Strength"**. Legend 2 Line One: **"Blue End"**. Line Two: **"Strength"**. Go to Form 3.
Enter Data	•Number of Clusters = **"6"**.
	•Go to BARSTYLE button and press the **Space bar**. The fill for Bar 1 is C. The fill for Bar 2 is D.
	•Go to LABELS AND VALUES button and ensure that the Display option is Yes.
	•Enter the Mission names in Cluster labels. Enter BSTART data in first Bar values and BEND data in second Bar values.
Draw the Chart	•Follow the same procedures as in P.E. 2 to draw the chart.

Check your chart against the Feedback Sheet on the next page.

NATIONAL TRAINING CENTER
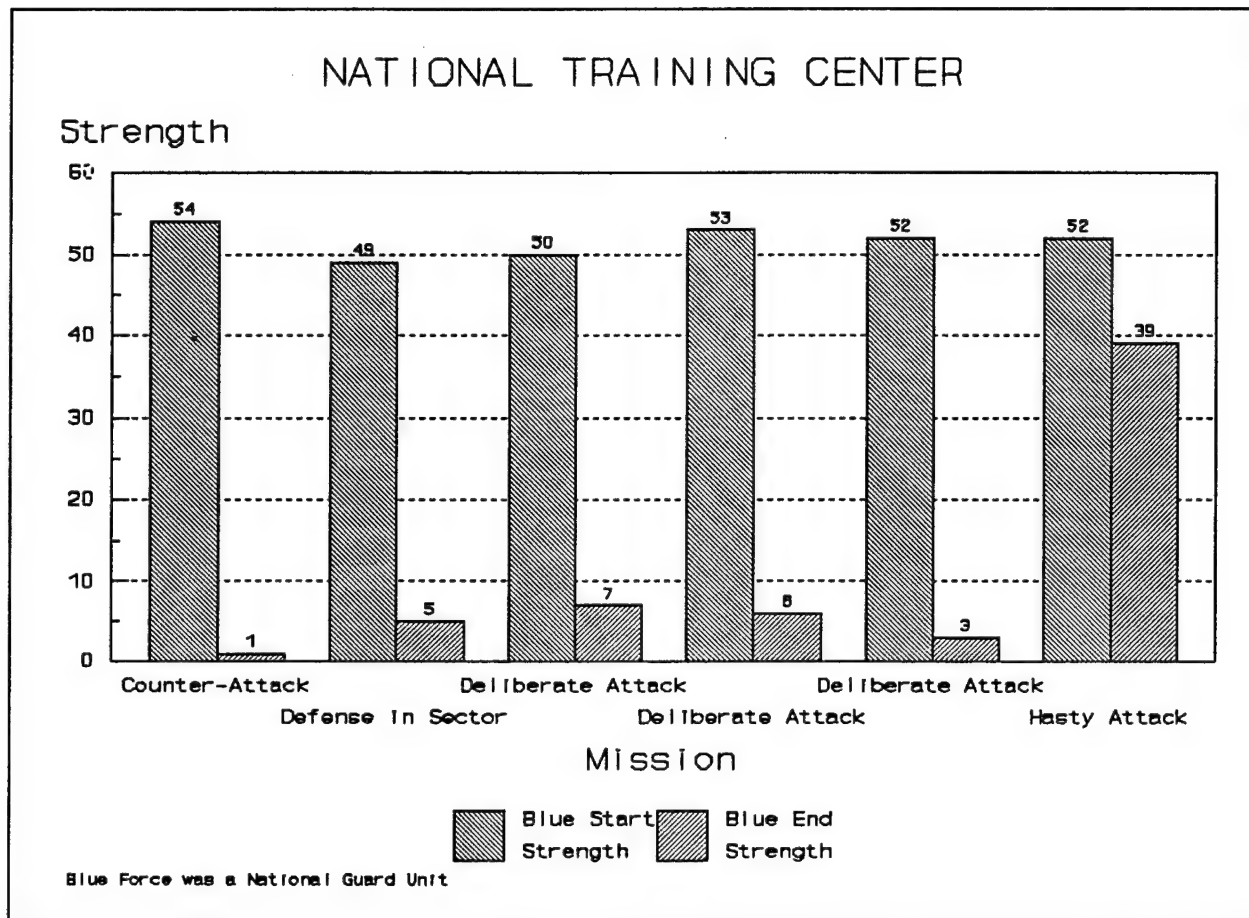
Figure 3: A Clustered Bar Chart

If your chart matches the above, continue the module, if you need help, contact a facilitator.

Save the Chart	•Press **Enter** to accept the chart. **Select F** from the menu. **Select S** from the File menu. **Select C.** Save your Chart as **VBAR2(Your Initials)** i.e. VBAR2JRG.
Export the Chart	•**Select F.** **Select E (Export).** Name the export file **VBAR2(Your Initials).**
Quit	•Press **Q.** Press **Y** to return to the main menu.

P.E. 4: A Bar-Line Chart

Use the data from the table on Page four. This time you will use the same data as in P.E. 3, but simply modify the forms to create a bar-line chart.

Retrieve a Chart	•From the menu select *F*. Select *R* *(Retrieve)*. Select *C*. Enter *VBAR2(Your Initials)* in Name. Press *F10*. You should be at Form 1.
Modify Form 1	•*Select Bar-Line* for the chart type. •Go to Note 1 and press *Delete*. •Go to Form 3.
Modify Form 3	•Go to LINESTYLE and *Select B dashed* for Line 1. •Go to Object Type 2 and *change from Line to Bar*.
Draw the Chart	•Press *F10*, select *G* and then press *Enter* to draw the chart.
Add Notes	•Press *Esc* twice to return to Forms. Go to Form 1. Note 1 *"Blue Force was a National Guard unit"*. Note 2 enter *Your Intials* to identify your chart i.e. JRG.
Complete the Chart	•Save the chart as *BLINE(Your Initials)*. •Export the chart as *BLINE(Your Initials)*. •Select *P (Print)*. Select *G* to print your chart. Pick the chart up at the Lazer Printer, ensuring you have your own chart.

Check your chart against the Feedback Chart on the next page.

NATIONAL TRAINING CENTER

Strength
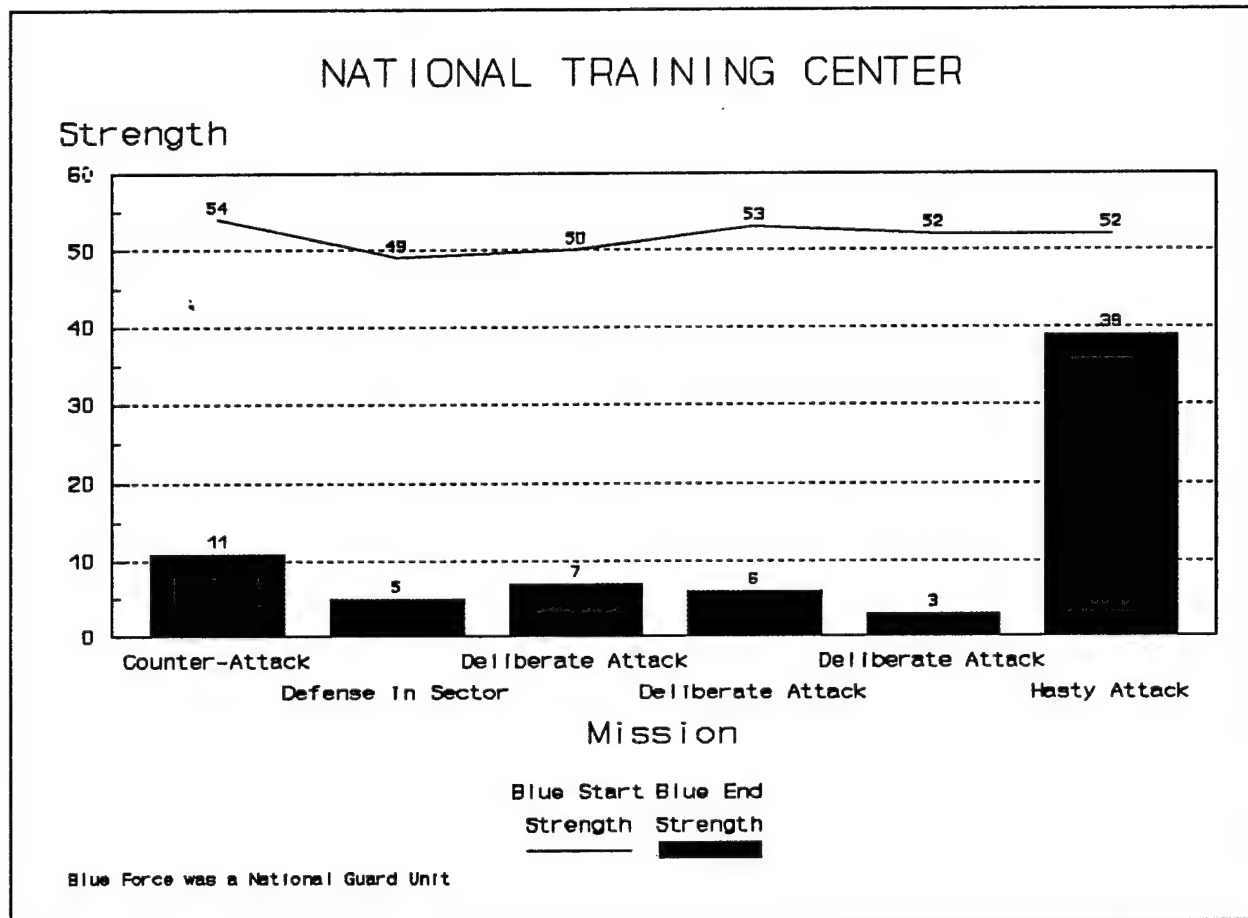
Figure 4: A Bar-Line Chart

If your chart matches the above, you have successfully completed this module. If you are comfortable using Freelance, do the Skill Assessment.   If you still have questions, ask one of the facilitators or one of your colleagues who has finished this segment.

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Skill Assessment Answer Sheet

The students' Skill Assessment charts should match the following chart:
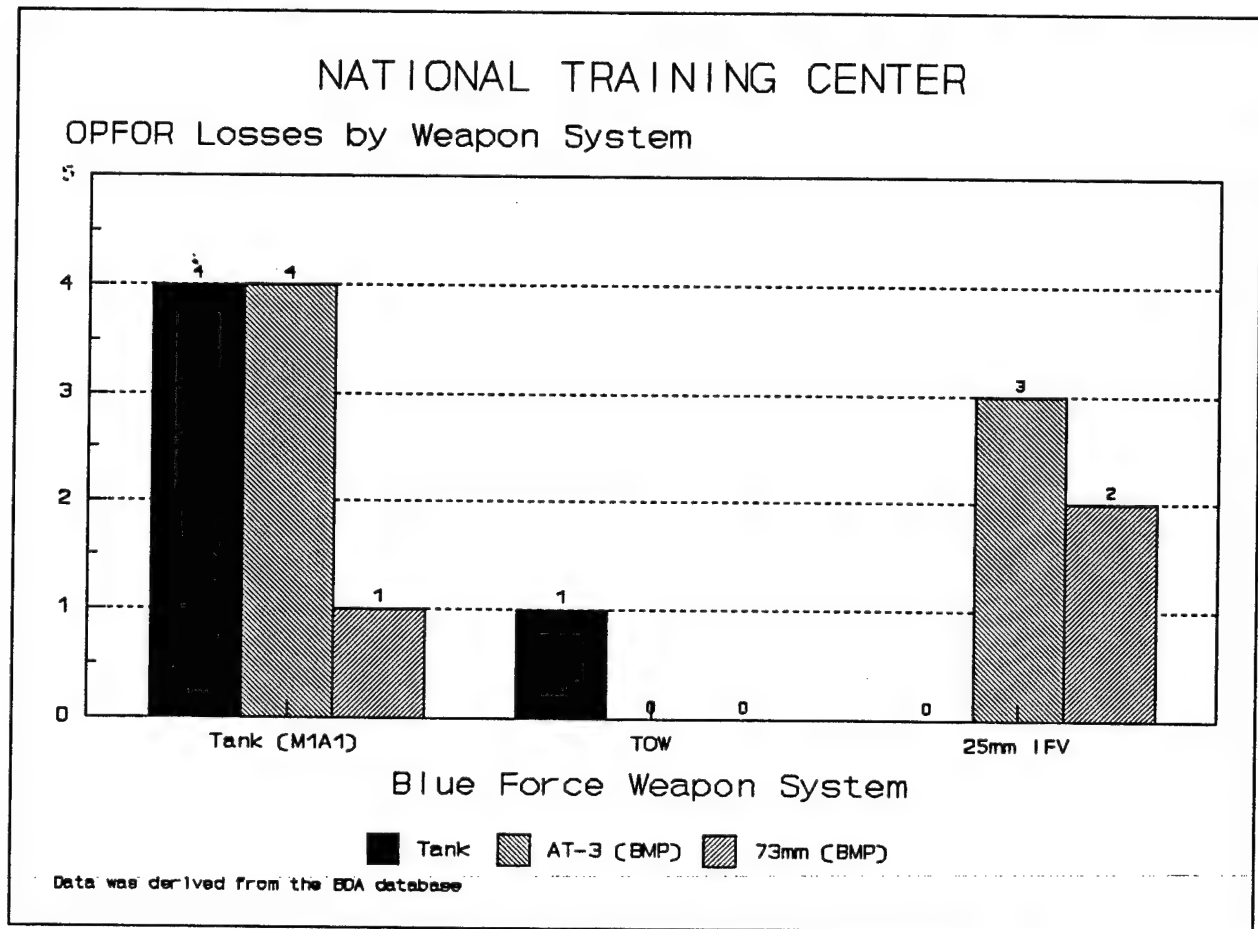
If the student has successfully completed the module, he/she should be told to begin the next module.

Create Slides Using the Word Perfect Software Package

Purpose: This module covers the basics of creating slides for use in briefings and reports. The skills involved are necessary for the creation of slides.

Resources:

- Combat Analyst Work Station with Word Perfect Software package.

- Facilitators who will help with basic procedures.

- Word Perfect documentation and work books.

Estimated Time To Complete: 2 Hours.

Certification: You will check your slides against a Feedback Sheet and then show your results to a facilitator.

How To Proceed: The module has Practical Exercises and a Skills Assessment. You have the option of completing the Skills Assessment prior to working on the full module if you feel that you have the requisite skills to complete it correctly. If the Skills Assessment is correctly completed, you may skip the rest of this module, otherwise, first complete the Practical Exercises, and then complete the Skills Assessment. Permission to skip the Practical Exercises may only be granted by a facilitator.

Performance Objective: Using the Combat Analyst Workstation, the required software package, and any required documentation, create a briefing slide.

Skill Assessment: The Skill Assessment is on the next page. You will be working with data from the BDA database.

Skill Assessment:

Using data from the tables on this page, which were derived from the BDA database, create a slide which presents the Blue Force (BLUFOR) Weapon Types, the number and type of OPFOR targets destroyed by each BLUFOR Weapon Type, and total OPFOR losses by Target Type. The slide will follow the format shown on page four and will include a title identifying the Combat Training Center. In addition your initials should be shown to identify the slide and the slide should be saved as SK2.(Your Initials) i.e. SK2.JRG.

Weapon Type	Weapon Side	Target Type	Target Side	Lost
1	B	1	O	4
1	B	2	O	4
1	B	3	O	1
2	B	1	O	1
4	B	2	O	3
4	B	3	O	2

Weapon Side	Weapon Type	Weapon Description	Target Side	Target Type	Target Description
B	1	Tank (M1A1)	O	1	Tank
B	2	TOW	O	2	AT-3 (BMP)
B	4	25mm Bradley	O	3	73mm (BMP)

Print the chart and take it to one of the facilitators.

Create Slides Using the Word Perfect Software Package

One of the most frequent ways to present the results of your research is to conduct a briefing. To support such briefings, the Combat Analyst Workstation includes word processing software that can be used to prepare briefing slides. This module covers two procedures using Word Perfect software:

- Prepare a text slide.

- Prepare a slide with a table.

The Army Research Institute (ARI) has developed a standard for slides, which you will follow in the preparation of your slides. The example on the next page illustrates the ARI standard slide.

TITLE, HELVETICA BOLD 30 PTS.
SUBTITLE, HELVETICA 24 PTS.

Body Text, Helvetica 18 pts.

- Margins, left and right at 1.5"; top and bottom at 1.0"

- Subtext, first group use bullet (Ctl-V-**).

    -- Second group use two dashes.

Tab Settings:

- First Tab set at 0.75"

    -- Second Tab set at 1.25"

    -- Third Tab set at 1.75"

(<u>NO</u> Corporate LOGOS, Ids, or Symbols)

4

The two practical exercises in this module are based on the tables below.

Table 1: Data for Practical Exercises

MISSION NUMBER	MISSION	BSTART	BEND
1	COUNTER-ATTACK	54	11
2	DEFENSE IN SECTOR	49	5
3	DELIBERATE ATTACK	50	7
4	DELIBERATE ATTACK	53	6
5	DELIBERATE ATTACK	52	3
6	HASTY ATTACK	52	39

The table shows task force strength at the start and end of six force-on-force missions at NTC. The column labeled BSTART contains the number of combat vehicles (M1 and M2) at the start of the mission; BEND contains the number of vehicles that survived the mission. The data are based on performance of a National Guard task force.

The Practical Exercises (P.E.) should be completed using the mouse device whenever possible. The first P.E. covers the procedures to create a text slide, in this case a possible overview slide.

P.E. 1: Create an Overview Slide

Enter Word Perfect	•Move the cursor to the Word Perfect Icon and *double click* the left button.
Change Paper Type	•Move the cursor to Layout and *Click. Click* on Page. •At the Format:Page screen, press *"7" or "S"*(ize). •Move the cursor to Standard-Wide and *Click* on it. •Press *"1" or "S"*(elect) and the Format:Page screen appears. The Paper size should be 11" X 8.5" and Type should be Standard. •Press *F7* (also called the exit key) to return to your document.
Set Margins	•Move cursor to Layout and *Click. Click* on Line. •Press *"7" or "M"*(argins). •Left Margin: Enter *1.5*. Press *Enter*. •Right Margin: Enter *1.5*. Press *Enter*.
Set Tabs	•Press *"8" or "T"*(ab) •Move the cursor to Delete EOL and *Click* to delete tabs. •Type *0.75,.5 Enter* to enter the tabs. Press *Exit*.
Select a Font	•Move the cursor to Font and *Click. Click on* Base Font. •Move the cursor to Helv 30pt Bold (land) (AC) and *Click* to highlight. •Press *"1" or "S"*
Enter Title	•Press *Shift F6* to center the Title. •Press *F6* again to make the Title Bold. •Type *"NATIONAL TRAINING CENTER". Enter.* •Press *F6* to turn off Bold.
Select a New Font	•Move the cursor to Font and *Click. Click on* Base Font. •Move the cursor to Helv 18pt Bold and *Click* to highlight. •Press *"1" or "S"*.

Enter Body Text	•Press *Control-V* and then press the *asterisk key* twice to create a bullet. •Press the *Space bar* twice. •Type *""Six Missions"*. Press *Enter* twice. •Press the *Tab key* twice. Type *"-- All Force-on-Force*. Press *Enter* twice. •Create a bullet. Type *"M1 and M2 Start and End Strength"*. Press *Enter* twice. •Create a bullet. Type *"National Guard Task Force"*.
Identify the Slide	•In bottom left hand corner type *"Your Initials"*, i.e. "JRG", to identify your slide.
Print the Slide	•Move the cursor to File and *Click*. Move the cursor to Print and *Click*. Press *"2" or "P"*(age) to print your slide.
Save the Slide	•Press *F7*. Press *"Y"*(es). Save your document as *"SLD1(Your Initials)"*, i.e. "SLD1JRG". Press *"N"*(o) to return to Word Perfect.

Collect your slide at the Laser Printer and check it against the Feedback Sheet on the next page.

NATIONAL TRAINING CENTER

- Six Missions

  -- All Force-on-Force

- M1 and M2 Start and End Strength

- National Guard Task Force

JRG

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P.E. 2 also uses the information on page five. This time you will be creating a slide with a Table.

P.E. 2: Create an Overview Slide with a Table

Change Paper Type	•Move the cursor to Layout and *Click*. *Click on Page*. •Press *"7"or "S"*. •Move the cursor to Standard-wide and *Click*. Press *F7*.
Set margins	•Move cursor to Layout and *Click*. *Click* on Line. •Press *"7" or "M"*(argins). •Left Margin: Enter *1.5*. Right Margin: Enter *1.5*.
Set Tabs	•Press *"8" or "T"*(ab) •Press *Ctrl-1* to delete tabs. •Type *0.75 Enter* for the first tab; type *1.25 Enter* for the second tab; type *1.75 Enter* for the last tab. Press *F7 twice.*
Select a Font	•Move the cursor to Font and *Click*. *Click on* Base Font. •Move the cursor to Helv 30pt Bold (land) (AC) and *Click*. •Press *"1" or "S"*
Enter Title	•Press *Shift F6* to center the Title. •Press *F6* again to make the Title Bold. •Type *"NATIONAL TRAINING CENTER". Enter.* •Press *F6* to turn off Bold.
Change Font	•Move the cursor to Font and *Click*. *Click on* Base Font. •Move the cursor to Helv 18pt Bold and *Click* to highlight. •Press *"1" or "S"*.

Continue P.E. 2 on the next page

Create a Table	•Move the cursor to Layout, *Click*. •Move to Tables, *Click*. •Move to Create, *Click*. •Number of Columns: *"3" Enter*. •Number of Rows: *"7" Enter*. •Press *Exit (F7)*.
Enter Data	•In cell A1 (check lower right hand of the screen to see which cell you are in) type *"MISSION"*. Then press *Tab or Right arrow key*. •In cell B1 type *"START STRENGTH" Tab*. •In cell C1 type *"END STRENGTH" Tab*. •In cell A2, type *"COUNTER-ATTACK"*. This caused "COUNTER-" and "ATTACK" to appear on two lines. We want mission on only one line in the table, otherwise the table will be too large to fit on the page.
Edit the Table	•Move cursor to Layout, *Click*. •Move cursor to Table, *Click*, and then move to Edit and *Click*. •Press *Ctrl-Right* until "COUNTER-ATTACK" is on one line. •Press *Ctrl-Right* three more times. Press *Exit(F7)*.
Enter Data	•In cell B2 type type *"54" Tab*;in cell C2 type *"11" Tab*. •Continue to enter the data until all cells are filled. •Type *"Your Initials"*, i.e. "JRG" in the lower left hand corner of the slide.
Print the Slide	•Move the cursor to File and *Click*. Move the cursor to Print and *Click*. Press *"2" or "P"*(age) to print your slide.
Save the Slide	•Press *F7*. Press *"Y"*(es). Save your document as *"SLD2(Your Initials)"*, i.e. "SLD2JRG". Press *"N"*(o) to return to Word Perfect.

Check your slide against the Feedback Sheet on the next page.

Feedback Sheet for P.E. 2

NATIONAL TRAINING CENTER

MISSION	START STRENGTH	END STRENGTH
COUNTER-ATTACK	54	11
DEFENSE IN SECTOR	49	5
DELIBERATE ATTACK	50	7
DELIBERATE ATTACK	53	6
DELIBERATE ATTACK	52	3
HASTY DEFENSE	52	39

JRG

If your slide matches the Feedback Sheet, you have successfully completed this module. If you are comfortable using Word Perfect to create slides, do the Skill Assessment. If you still have questions, ask one of your colleagues who has finished this module or one of the facilitators.

Perform Quantitative Data Analysis Using SPSS

Purpose: This module covers the use of the Statistical Package for the Social Sciences (SPSS) to perform three types of analysis:

- Crosstabulation of categorical data
- Comparison of groups on an outcome measure of interest
- Correlation of variables

Each for each type of analysis, you will be shown how to use SPSS to compute the statistics and display the data to enhance understanding of the findings.

You will also learn some basic skills in recoding data using the SPSS program.

Resources:

- Combat Analyst Work Station with SPSS for Windows.
- Data disk containing sample data for analysis.
- Facilitators who will help with basic procedures.
- SPSS documentation.

Estimated Time to Complete: 2 hours

Certification: You will check your output against a Feedback Sheet and then show your results to a facilitator.

How to Proceed: The module has Practical Exercises and a Skills Assessment. You have the option of completing the Skills Assessment prior to working on the full module if you feel you have the requisite skills to complete it correctly. If the Skills Assessment is correctly completed, you may skip the rest of this module. Otherwise, first complete the Practical Exercises, and then complete the Skills Assessment. Permission to skip the Practical Exercises may only be granted by a facilitator.

Performance Objective: Using the Combat Analyst Workstation, the SPSS program, conduct an analysis of the type described above.

Skill Assessment: The Skill Assessment is presented following a brief discussion of the data on the data disk.

Description of Sample Data

Source: The sample data are from a recent study conducted using the Archive materials from the National Training Center. Three subject matter experts (SMEs) read the Take Home Package (THP) descriptions of all force-on-force missions conducted by 18 task forces. Each SME rated each mission with respect to performance of the seven Battlefield Operating Systems (BOS): Intelligence, Maneuver, Fire Support, Air Defense, Combat Service Support, Mobility and Survivability, and Command and Control. The data sample data consist of the average ratings on each BOS for all the offensive missions performed by each task force (missions classified as defenses or movements to contact are not included in this data). The data base consists of 18 records, one for each task force. Each record contains a Rotation number (which is not the actual rotation number, but represents the relative position of the rotation among all the NTC rotations in the study), the average scores for each BOS, and two fields (or variables) that contain information about the nature of the task force:

- Led by an Active Component or Reserve Component Headquarters
- Led by an Armor or Mechanized Infantry Headquarters

It is important to note that the scale for the ratings was:

> **1= Adequate**
> **2= Borderline**
> **3= Inadequate**

So, as in the game of golf, <u>lower scores indicate better performance</u>. It is also worth noting that the ratings tended to the 'inadequate' end of the scale. This is due, in part, to the fact that the THP stresses things that the unit must improve and does not always highlight areas of adequate performance.

You will examine the data to see if there are differences between active and reserve component task forces, and you will examine trendlines in performance over time to determine if performance at NTC is changing. (The rotations examined spanned four years. Rotations performed after the start of Desert Shield are not included).

Even in this limited data set, there are many avenues of investigation that may be pursued. Once you have tried the Practical Exercises and Skill Assessment you may want to see if you can apply some of the same procedures to determining if there are differences between the type of headquarters unit leading the task force.

2

Skill Assessment:

Using the sample data on the disk, perform the following steps:

1) Load the data into the SPSS program.

2) Create a variable that represents 'high' and 'low' categories on command and control (called c_and_c in the data base). 'High' scores are those below 2.75 (remember the direction of the scales) and 'low' scores are those at or above 2.75. Conceptually, this dividing line is three-fourths of the way between borderline and not adequate.

3) Crosstabulate the categorical variable with the information about active or reserve headquarters with the newly created categorical variable on command and control. Interpret the findings.

4) Use the EXPLORE procedure in SPSS to examine the distribution of the original command and control variable in the data base, classified by whether the headquarters was Active or Reserve. Print the graph and interpret the findings.

5) Use the AUTORECODE procedure in SPSS to create a new variable that has the value '1' if the task force was led by an active component headquarters, and the value '2' if the task force was led by a reserve component headquarters.

6) Use the ANOVA (analysis of variance) procedure to test the statistical significance of the difference between active-led and reserve-led task forces with respect to command and control (use c_and_c). Interpret the findings. Do they correspond with the information from the EXPLORE procedure?

7) Use the BIVARIATE correlation procedure to compute the correlation of between the rotation index number ('rotation' in the data base) and command and control (use c_and_c). Interpret the finding: Is command and control being performed better at the end of the period under consideration than it was at the beginning? (Remember the direction of the scales!)

8) Use the GRAPH procedure to produce and print a scatter plot of the relationship between the rotation index number and the command and control variable. Does this picture correspond to the correlation you computed earlier? Is there anything unusual looking in this plot?

Practical Exercises

Starting SPSS: In the Windows screen (what you see when you first start up the machine) you will see a row of 'Applications' at the bottom. Using the mouse, move the pointer to the icon labeled 'SPSSWIN'. Double click the left button and SPSS will be loaded onto your system. (Presently only one person at a time can use SPSS. You may get a notice that someone else is using it.) When SPSS loads you will see a screen with what looks like cells of a spreadsheet (rows and columns of boxes) labeled 'Newdata'. The first thing to do is put some data into these cells.

DON'T PANIC! If you make a mistake in selecting a menu item, and a dialogue window appears that is not discussed in these practical exercises, you can usually close it by clicking once on the button labeled CANCEL.

Almost all activity will involve moving the pointer and clicking once with the left button. The right button is 'dead' in SPSS.

Loading data into SPSS: For these exercises, we have taken the expedient of creating an SPSS-compatible data file for you to use. If you have only a limited amount of data, you could key enter it into the Newdata window. SPSS is able to 'import' data from a variety of sources (spreadsheets, databases, ascii files, etc), so if you have data in Lotus 1-2-3 or dBase, for example, you can import it easily. We have prepared a program for transferring data from the Mission Data Bases into SPSS, but you will need the assistance of a facilitator to use this program.

Place the floppy disk with the data file in it into the 'A' drive (at the top of the computer). Lock the disk in place using the lever.

Click on the File item in the top menu bar. Click on 'Open'. Click on 'Data'.
In this dialogue window, move the pointer to the [-A-] under Directories and click once. Click once on the button in front of the word SPSS (it should already have a dark dot in it). (Don't click the button by SPSS Portable.) In the Files box you should see one file (the file on the disk you put into the A drive). Click on this file name. This file name will go into the Name box. Then click on OK. The data will load into the cells of the spreadsheet and you will be returned to the window showing those cells. This may take about 10 seconds. You can use the mouse to move the 'slider' at the right side (or at the bottom) to change the cells you are looking at -- be patient while it redraws the screen, it may take a second. Don't Panic!

Let's get right to some analysis. . . .

Comparing groups

The first thing we will do is examine whether having an active or reserve headquarters made a difference in the ratings of the performance of the Maneuver BOS. Remember that active and reserve headquarters will differ in many ways (opportunity to train at the head of a full task force may be the most obvious difference, but there are likely to be others). Even if we detect a difference, we have not explained the reason why there is a difference. The data we have do not contain that information, so we may only speculate as to the reasons.

Some of the statistical language we will be introduced to here includes:

Dependent variable: The outcome of interest. In this case ratings of performance on the maneuver BOS, which are in a variable called 'maneuver'.

Factor: The name of the grouping variable that tells which cases belong in each group. In this case we use the variable 'actres' which has the word 'ACTIVE' when the task force headquarters was active component, and 'RESERVE' when the task force headquarters was reserve component.

Looking at distributions: One of the guiding principles of data analysis you will see reflected in these practical exercises is: "Always look at the data as well as the statistical analysis." The statistical analysis usually consists of some summary numbers and a statement about statistical significance of the results. The data may contain information that is not well summarized in the statistical analysis, however.

Click on the Statistics item in the top menu bar. Click on Summarize. Click on Explore. In this dialogue window you will need to do the following:

1) Click on 'actres' to highlight this variable. Note that it is marked with a < symbol to indicate that it is a 'character' variable not a numeric variable.

2) Note that some of the arrow boxes are now dark. Menu items that are 'grey' are not active -- you can't use them. Because 'actres' is a character variable it cannot be a Dependent variable, so that arrow is grey. Click on the arrow pointing to the 'Factor list' -- the variable 'actres' will move from the variable list to the Factor list. Note that the arrowhead has changed direction -- so you can put 'actres' back into the variable list if you moved it by mistake. (Nice touch, don't you think?)

3) Now highlight 'maneuver' in the variable list. (That's right, move the pointer to the name and click once.) Move it to the Dependent list by clicking the appropriate arrow.

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4) Click OK to launch the analysis. A few clicks and whirs and you should be looking at the output pages. To see a graph, click on the icon to the right of the button labeled 'GLOSSARY' in the menu bar. That icon is supposed to be a graph. It should look like the graph printed on the next page.

Click on the File button. Click on 'print'. Click on 'OK'. This should send a copy of your graphic to the printer.
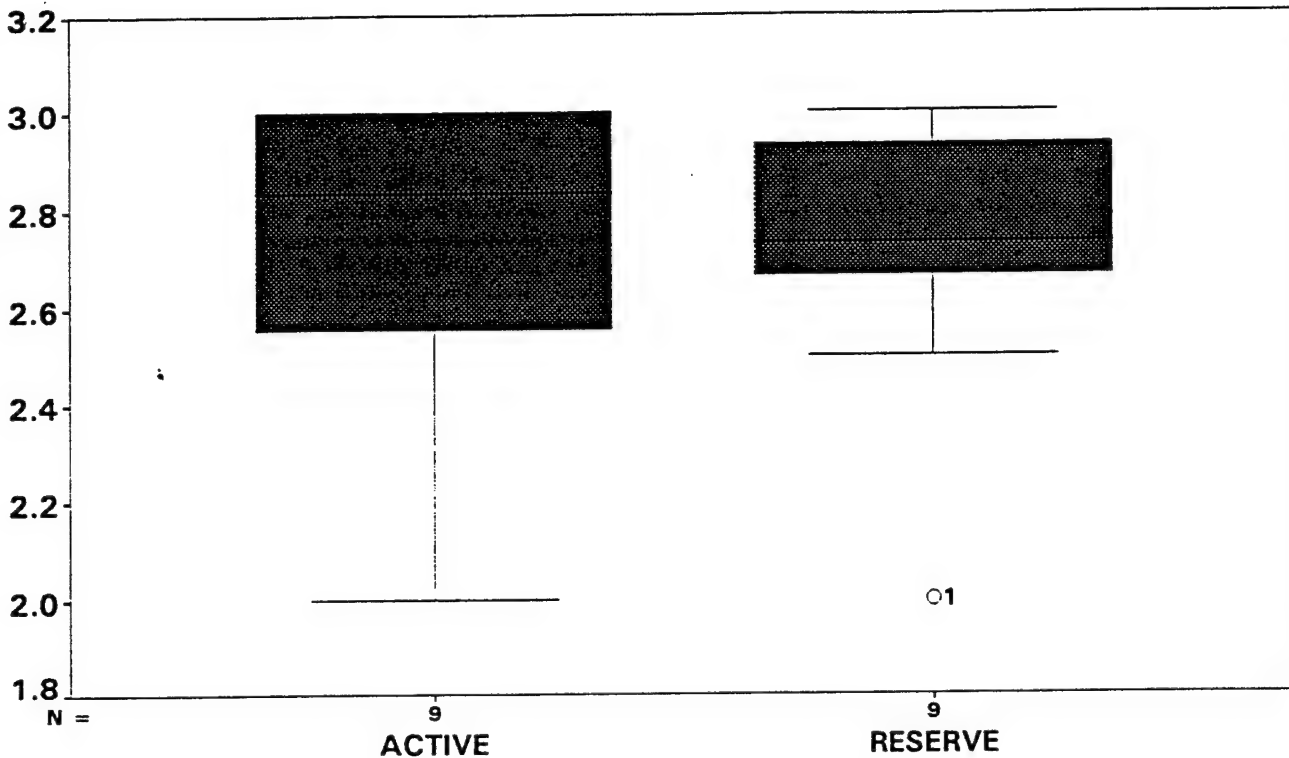
ACTIVE COMPONENT VS RESERVE COMPONENT

Interpretation of the graphic:

The graphic you have created is called a 'boxplot' for the reason that it looks like two boxes with whiskers. One box is for active and one is for reserve. The line in the middle of each box is the median value -- half the cases in that group fall above this value, half are below it. The top and bottom edge of the box mark off the middle half of the distribution. The whisker above the top of the box contains 25% of the cases in the group, while the whisker below the bottom of the box contains another 25% of the cases in the group. The plot shows that there is a lot of overlap between the two groups. The other feature to notice is that all of the ratings fall between 2 and 3: The best average performance was 'borderline'. The median for the Reserve group is a bit lower (better) than that of the active group.

Now find the icon that looks like a page with lines of writing whose top right hand corner is turned down. It is at the right side of the bar below the words Chart Carousel. Click on this icon to move to the output listing where you will see statistical summaries of each group (shown in the box on the next page). These summaries contain the mean and the median for each group, as well as the standard deviation and variance. The mean is the numerical average for the group, and, like the median, it is called a measure of 'central tendency' which tells us something about where the middle of the distribution is located. The variance tells us about the spread of the distribution -- small values mean the data are clustered together while large values mean the data are spread out a lot. The standard deviation is the square root of the variance and can be used to determine whether an individual data value is unusually far away from the mean. A data point that is three or more standard deviations from the mean is very rare. Such data points should be checked to see if there was an error in collecting or recording the data.

The other values in the output are interesting if you are particularly interested in the shape of the distribution. The SPSS documentation and introductory statistics books will explain them more fully.

So far, we have seen that the task forces led by active and reserve component headquarters had ratings on the maneuver BOS (for offensive missions) that overlapped a lot. Next we will test the significance of the difference between the mean values of these two distributions of average ratings. (Do you think the difference is likely to be statistically significant?)

8

MANEUVER
By ACTRES   ACTIVE

Valid cases: 9.0   Missing cases: .0   Percent missing: .0

Mean	2.7068	Std Err	.1247	Min	2.0000	Skewness	-1.1286
Median	2.8333	Variance	.1399	Max	3.0000	S E Skew	.7171
5% Trim	2.7298	Std Dev	.3740	Range	1.0000	Kurtosis	.0154
				IQR	.6111	S E Kurt	1.3997

Frequency   Stem & Leaf

    2.00 ⸲   2 * 02
    3.00   2 . 578
    4.00   3 * 0000

Stem width: 1.00
Each leaf: 1 case(s)

MANEUVER
By ACTRES   RESERVE

Valid cases: 9.0   Missing cases: .0   Percent missing: .0

Mean	2.6944	Std Err	.1034	Min	2.0000	Skewness	-1.4606
Median	2.7333	Variance	.0962	Max	3.0000	S E Skew	.7171
5% Trim	2.7160	Std Dev	.3102	Range	1.0000	Kurtosis	2.7929
				IQR	.3833	S E Kurt	1.3997

Frequency   Stem & Leaf

    1.00 Extremes   (2.00)
    1.00   25 . 0
    2.00   26 . 66
    2.00   27 . 35
     .00   28 .
    1.00   29 . 3
    2.00   30 . 00

Stem width: .10
Each leaf: 1 case(s)

9

A Word about Statistical significance vs Practical significance

Practical significance means that a difference between groups has substantive meaning. A tank that can destroy an enemy combat system one kilometer further away than any other should have an advantage on the battlefield, everything else being equal. Going to war with task forces rated 'inadequate' is likely to be more costly than going to way with task forces rated 'adequate'.

In the case of the new tank, the weapon system may be designed to kill at greater ranges, but the human operators may not be able to use it adequately to achieve that degree of advantage consistently. In the case of the performance ratings the performance of one unit may vary from mission to mission, and the raters may not use their scale consistently. Given that there will be some variation, how can we determine that two groups are different?

If we can run an experiment where we randomly assign experimental units to the various conditions (e.g. assign tank crews to the different types of tanks; assign active or reserve headquarters to lead task forces), then the randomization of all other factors that might influence the outcome (e.g. quality of the tank crews; quality of the task forces; variations in the missions, etc.) will lead to the inference that differences in the location (here, the mean value) of the distributions must be due to the difference in conditions controlled by the experiment (tank A versus tank B, for example). The statistical test of these differences determines whether the difference between means is unlikely if the two groups are otherwise equal (random assignment makes this assumption true). Statistical significance is an index of the likelihood of a difference like the one observed (or one even more extreme), given the observed variation between units within the groups. Typically, we say that a value of .05 or less is statistically significant. This means that there are only five chances in 100 of the difference in means being as big or bigger by chance alone (i.e. the random assignment produced the difference, not the inherent difference between groups).

In studies like the one from which you have a sample of data, the groups are not determined by random assignment. The variation within groups is a result of natural variation (different opportunities to train, different leaders, etc.). To make use of the statistical test, we have to realize that being led by an active or reserve headquarters may entail lots of variables that could account for any differences in outcomes. This type of comparative group study has historically been very important, however. For example, noticing that people exposed to cowpox did not often contract smallpox was an important step in developing both a prevention for smallpox and understanding all disease mechanisms. In the present case, noticing that reserve and active component forces differ may lead to useful speculation about why, which may lead further to improvements in manning and training both types of force.

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To prepare for the analysis of variance that will examine the differences between the active-led and reserve-led task forces with respect to the maneuver BOS, we must transform the 'actres' character variable into a variable that has two numeric values:

1 for active-led task forces
2 for reserve-led task forces

To do this we will use a convenient procedure in SPSS that automatically recodes character variables into numeric variables.

Click on the word 'Transform'.

Click on the phrase 'Automatic Recode'.

Click on 'actres' to highlight it and click the arrow key to move it to the 'Variable' box.

Move the cursor to the empty box next to the words 'New Name' (now in grey). Click in the box, which will give you a vertical line -- the character entry cursor.

Type 'acrc' (don't type the quote marks).

Now the New Name button is dark and you should click on it. The name you put it, 'acrc', replaces the string of question marks in the Variable box.

Click on OK and after a while you will see the following in the output window:

ACTRES	ACRC	ACTIVE COMPONENT VS RESERVE COMPONENT
Old Value	New Value	Value Label
ACTIVE	1	ACTIVE
RESERVE	2	RESERVE

Testing for statistical significance

To test the difference between active and reserve led task forces with respect to the maneuver BOS, do the following:

Click on the word 'Statistics'. Click on the phrase 'ANOVA models'. Click on the phrase 'Simple Factorial' (which is the only choice at this point).

Move the label 'acrc' to the box labeled Factors. (Highlight by clicking on it, and click the appropriate arrow button.)

Click on the button 'Define Range'. The cursor will go to the box next to the word 'Minimum'. Enter the number 1. Use the mouse to move the cursor to the box next to the word 'Maximum'. Click once. Enter the number 2. Click the button labeled 'Continue'.

Move the label 'maneuver' to the box labeled 'Dependent'. (Highlight by clicking on it, and click the appropriate arrow button.)

Click on OK. You should be taken back to the output window where you will see the results.

The analysis (on the next page) shows that the difference between active and reserve led task forces is not statistically significant (the significance of F is not .05 or smaller).

* * * A N A L Y S I S   O F   V A R I A N C E * * *

MANEUVER
by   ACRC   ACTIVE COMPONENT VS RESERVE COMPONENT

UNIQUE sums of squares
All effects entered simultaneously

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Main Effects	.001	1	.001	.006	.940
ACRC	.001	1	.001	.006	.940
Explained	.001	1	.001	.006	.940
Residual	1.889	16	.118		
Total	1.890	17	.111		

18 cases were processed.
0 cases (.0 pct) were missing.

Crosstabulating categorical variables

In the module on preparing a research plan, content analysis was discussed briefly. One style of content analysis is to develop a set of mutually exclusive categories that allow one to classify responses to open ended questions (or, perhaps, observations). If you have two such classification schemes then you can crosstabulate the results and determine if there is evidence of association between them. We will illustrate this type of analysis with the simplest example: The two-by-two table.

We will again consider active-led and reserve-led to be two mutually exclusive categories describing task forces. We will create a new variable concerning the maneuver BOS that will have two categories (high value or lower performing, vs low value or higher performing). For the sake of argument we will say that any task force that got an average rating of 2.75 or higher on the maneuver BOS is in the low performing group. This 'cut point' is 3/4 of the way between 'borderline' and 'inadequate'. The rest of the task forces will be in the high performing group. To keep the direction consistent, we will assign the value 1 to the high performing group and the value 2 to the low performing group.

Click the word 'Transform'. Click the word 'Recode'. Click the phrase 'Into Different Variables'.

Click on the word 'maneuver' to highlight it and use the arrow to move it into the Input Variable box.

Click the box under the word 'Name'. This will give you the character entry cursor. Type the letters   mvr   .

Click the box under 'Label' and type 'Maneuver coded value' (don't type the quote marks).

Click on 'Change'.

Click 'Old and New Values'.
Under 'Old Values' click 'Range Lowest through [empty box]'. You will get the character entry cursor in the empty box. Type in 2.754.
Under 'New Value' click the box by the word "Value" and enter 1.
Click 'Add'.

Under 'Old Values' click 'Range [empty box] through Highest'. Enter 2.755.
Under 'New Value' click the box by the word "Value" and enter 2.
Click 'Add'.

Click Continue. Click OK. You should be in the data window where you can use the slider at the bottom of the window to move to the right and see the new variable.

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Executing the Crosstabulation

Click on the word 'Statistics'.
Click on the word 'Summarize'.
Click on the word 'Crosstabs'.

Highlight the variable name 'acrc' by clicking on it and move it to the Rows box by clicking on the appropriate arrow.

Highlight the variable name 'mvr' by clicking on it and move it to the Columns box by clicking on the appropriate arrow.

Click on the button labeled 'statistics'. Choose Chi-square by clicking on it. Click on Kendall's tau-b (which is appropriate for a situation when one classification is nominal and the other is ordinal: The type of task force is nominal, there is no inherent order to the classifications; the outcome is ordinal -- 1 is better than 2).

Click on 'Continue'.

Click on the button labeled 'cells'. Click on percentages in both rows and columns.

Click on 'continue'. Click on OK. In the output window you should have the result shown on the next page.

Again, the result shows that there is not a statistically significant relationship between the type of task force headquarters (active or reserve component) and ratings on maneuver performance on offensive missions.

```
                MVR          Page 1 of 1
         Count  |
         Row Pct |
         Col Pct |              Row
                 |   1.00|   2.00| Total
ACRC     --------+-------+-------+
              1  |    4  |    5  |    9
ACTIVE           | 44.4  | 55.6  | 50.0
                 | 40.0  | 62.5  |
                 +-------+-------+
              2  |    6  |    3  |    9
RESERVE          | 66.7  | 33.3  | 50.0
                 | 60.0  | 37.5  |
                 +-------+-------+
         Column     10       8      18
          Total    55.6    44.4   100.0
```

Chi-Square	Value	DF	Significance
Pearson	.90000	1	.34278
Continuity Correction	.22500	1	.63526
Likelihood Ratio	.90805	1	.34063
Mantel-Haenszel test for linear association	.85000	1	.35655
Fisher's Exact Test:			
One-Tail			.31859
Two-Tail			.63719

Minimum Expected Frequency - 4.000
Cells with Expected Frequency < 5 - 2 OF 4 (50.0%)

Statistic	Value	ASE1	Val/ASE0	Approximate Significance
Kendall's Tau-b	-.22361	.22951	-.97333	

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Using correlation analysis to examine trendlines

A question that intrigues us about many aspects of life is: Have things changed over time? It would be interesting to know if performance on the Maneuver BOS has changed over the course of the four years included in the study. Is it getting better? Worse?

As with studies that compare existing groups (rather than groups formed by random assignment), studies of correlations among variables do not usually support strong causal inferences. They may, however, lead to further research and discoveries that will support strong causal models.

In studying trends over time, we must ask what is changing over time that may produce the changes in the outcome of interest? It is not enough to leave it that time alone is producing the change. We also have to ask whether the changes are in the underlying causes or in the behavior of the system used to measure the outcome. To be specific with respect to the study at hand:

> Are apparent changes in maneuver performance over time due to real changes in performance of units caused by changes in Doctrine, Organization, Training, Materiel, Leadership or Soldiering?

> Are apparent changes in maneuver performance over time due to changes at the NTC -- are the missions more (or less) difficult, are the observer/controllers more (or less) critical than they used to be?

> Were there any peculiarities of the system used to convert the THP into ratings of each BOS that might account for an apparent trend over time?

First, let's calculate some correlations:

Click on the word 'Statistics'. Click on 'Correlate'. Click on 'Bivariate'.

In the dialogue window you have opened, you can move variables into a list of Variables for inclusion in the correlation analysis. The easiest thing to do here is to place the pointer at the top of the list of variables, hold the left button down while you drag the cursor down the list of names. This highlights them all. Then click the arrow to move them into the box labeled 'Variables'. Note that the character variables do not appear and cannot be selected for this analysis. Now click on 'acrc' and use the arrow to send it back to the original list box. Do the same for 'mvr'. It is not interesting at this time to include these variables in the correlation analysis. If you want to try this later, go ahead.

Click off the 'x' in the box next to the heading 'Display actual significance value'. This is at the bottom of the dialogue window. Click OK.

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You should be placed in the output window and you will be looking at the correlation table. You can use the sliders to examine the entire table. Note that SPSS conveniently highlights the values that are statistically significant. This means that there is good evidence of a linear relationship between the two variables in question. Looking at the table shows that command and control is highly related to maneuver. This is not surprising. However, it may be higher than some of the other correlations because the author of the maneuver section of the THP may often write the command and control section, as well.

- - Correlation Coefficients - -

	AIRDEF	C_AND_C	CSS	FIRESUPT	INTEL	MANEUVER
AIRDEF	1.0000	.1160	.3175	.0975	.1705	.0137
C_AND_C	.1160	1.0000	.5208*	.1597	.5279*	.6173**
CSS	.3175	.5208*	1.0000	-.0158	.3917	.0834
FIRESUPT	.0975	.1597	-.0158	1.0000	.1647	.0568
INTEL	.1705	.5279*	.3917	.1647	1.0000	.2936
MANEUVER	.0137	.6173**	.0834	.0568	.2936	1.0000
MOBSURV	-.1586	.1871	-.1724	.5169*	.1996	.4238
ROTATION	.3544	.4452	.2226	-.0018	.1495	.5518*

	MOBSURV	ROTATION
AIRDEF	-.1586	.3544
C_AND_C	.1871	.4452
CSS	-.1724	.2226
FIRESUPT	.5169*	-.0018
INTEL	.1996	.1495
MANEUVER	.4238	.5518*
MOBSURV	1.0000	.1770
ROTATION	.1770	1.0000

Maneuver is related to the variable 'rotation', which is our measure of the passage of time. The positive correlation means that rotations with higher index numbers (more recent rotations) have higher scores on the maneuver variable -- they performed less well. So there is evidence of a declining trend in the performance of maneuver at NTC. Let's be sure to look at the relationship so that oddities in the data do not trip us up.

Click on the word 'Graphs'. Click on the word 'Scatter'. The selection 'Simple' is highlighted, so we proceed to click on 'Define'.

Highlight the word 'maneuver' and use the arrow button to move it to the box labelled 'Y Axis'.

Highlight the word 'rotation' and use the arrow button to move it to the box labelled 'X Axis'. Click OK. You should see a nice graphic resembling the next page.

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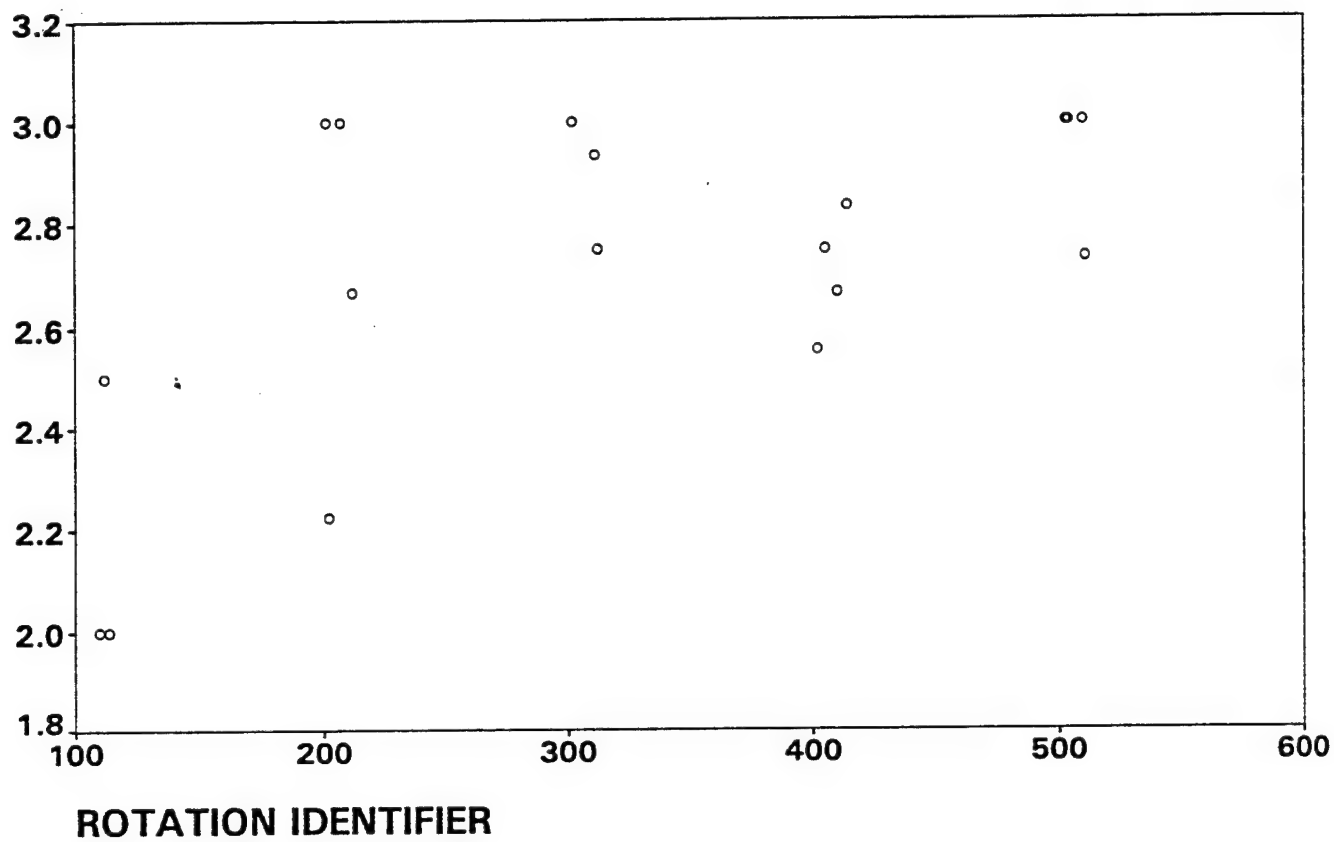
The better values (lower average ratings) appear to have occurred near the beginning of the timeframe included in the study.

Printing and saving your work

Click on the File button. Click on 'print'. Click on 'OK'. This should send a copy of your graphic to the printer.

Click on the text icon (the one that looks like a dog-eared page). Now if you click on the 'File' button and click on the 'Print' button, and click 'OK', you will send a copy of your output window to the printer.

Click on the 'File' button again. Click on 'Save as'. Change the directory to [-A-] if it is not already pointing to that directory. Enter a name in the 'Name' box. This is the name of the file you will send to the disk you put into the machine earlier. Click on OK. You should see the light for the disk drive (on the computer) light up. You should be able to retrieve this file into your word processor for writing reports or making slides. It will be a plain-vanilla ASCII file.

You are now ready to tackle the Skills Assessment section. You will be performing the same steps, using a different outcome variable of interest: Command and Control.

Prepare A Research Plan

Purpose: This module describes the main components required to develop a research plan with a primary focus on descriptive, case study, trend, and comparative research designs and content analysis.

Resources:
- o Applicable archive data sources

- o ARI Research Studies:
  - Direct Fire Fratricides at the NTC.
  - Case Study Approach.
  - Trends in Weapon Systems Performance: The Importance of Command Emphasis.
  - Operational Readiness Study from The Determinants of Effective Performance at the NTC.
  - NTC Performance Trends for Mortar Fire Support: Relationship to Training Doctrine.

- o Facilitators who will help with plan development

Estimated Time To Complete: 2 hours (not including the Skills Assessment).

Certification: You will check your work against Feedback Sheets and then show your results to a facilitator. For the Skills assessment, your research plan, is due by Friday.

How To Proceed: The module has Practical Exercises and a Skills Assessment. You have the option of completing the Skills Assessment prior to working on the full module if you feel that you have the requisite skills to complete it correctly. If the Skills Assessment is correctly completed, you may skip the rest of this module, otherwise, first complete the Practical Exercises, and then complete the Skills Assessment. Permission to skip the Practical Exercises may only be granted by a facilitator.

Performance Objective: Using a research issue, develop a research plan that identifies the methodology: data sources, research method, and data analysis method.

Skills Assessment: The Skills Assessment is on the next page. The outcome of the Skills Assessment will be a developed research plan; the plan is a requirement for conducting independent research during the following week.

Develop Research Plan

Skills Assessment

Complete the table below for your issue. Show your initial draft to one of the facilitators. Prepare to discuss the sample, sub-issues, sources and measures, general approach, and data analysis plans with a group of colleagues and CTC representatives. You may decide to revise the plan based on that discussion. The revised plan will provide the structure for your independent research.

Issue:	
Method	
Sample:	
CTC:	
Rotations:	
Missions:	
Echelon:	
Measures:	
Sub-Issues	Sources and Elements
Procedure:	
Data Analysis:	

December 5, 1992

PREPARE A RESEARCH PLAN

After having prepared a clearly defined issue statement and learning the various data sources contained in the Combat Training Center (CTC) Archive, the next step involves developing a general strategy to follow in gathering and analyzing the data necessary for answering the research issue. This strategy is called a research plan. A research plan is defined as the plan and structure of investigation to obtain answers to research questions. You will write out in detail what you propose to do and just how you plan to do it.

A research design or plan contains three essential components: (1) an issue statement, (2) methodology and (3) data analysis method. The best way to prepare a research plan is to write one that follows the same format as a finished report. The plan includes all components of a report except for the results, discussion, and conclusions.

You have already begun developing the initial parts of the research plan in the first module "Develop Issue Statement". The table below identifies the process involved in developing a plan. The data analysis section will be presented in a separate module, although, some examples of a data analysis statement will be focused on in some of the practical exercises.

Format for Research Plan

```
Introduction
  •Issue/Research Statement:

Methodology
  •Sample
    - unit, weapon system, BOS, echelon, CTC, missions, etc.
    - time period (i.e. FY88-90)
  •Measures
    -sub-issue
    -data sources
  •Procedure
    Descriptive research methods:
    -case study
    -trend study           what will be done
    -comparative study     how it will be done

Data Analysis
  •Statement of how data will be analyzed
```

METHODOLOGY

This section of the research plan lays out a detailed procedure of how the research problem/statement will be examined. A long drawn out description is not the aim, although specifying the details is essential. A plan that provides a specific and concise statement of the procedure to be followed is the objective.

The methodology section contains three parts: (1) a descriptive statement about the data sample that will be examined, (2) a statement of what will be measured and from which data source(s), and (3) a procedure statement. Samples of ARI research reports will be used in the practical exercises to help demonstrate various research methods that were used to address issues using CTC training data.

Sample

A statement about the sample of the study serves to describe the nature of the subject being examined. A sample statement for a typical CTC study identifies such descripters as the time period or rotation year, the CTC, mission, BOS, echelon, unit type, and data sources (THP, AAR, OPORDS, etc.). There can be many other types of descriptors regarding the study, depending on the particular issue being examined.

Practical Exercise 1:   Sample

Use the Hamza and Banks (1987) ARI study for this exercise. Read the "Methodology" section on page one.
   Q: What sample was used in the study?

   Sample:

Answer on next page

Feedback to Practical Exercise 1:   Sample

Q: What sample was used in the study?

A: Fratricides, as operationally defined, and as obtained from the NTC instrumentation system were presented according to history (of 39 battalions in 206 missions during 1985-86), according to training period, mission type, and range.   (See p.vii.)   This arrangement can also be determined by reading the next section, "RESULTS."

Identify Measures

The next segment of the methodology, "identify measures", contains two parts (1) identify sub-issues and (2) determine data sources. The first deals with identifying questions related to the primary issue. These questions help you check the thoroughness of data you will consider and assures that the data you do collect are pertinent to your issue. The second part of the section involves identifying appropriate data sources for examining sub-issues.

Identify Sub-Issues:

When you conduct your research, you will not be working in the dark. You have almost certainly made some educated guesses about the type of information that is related to your issue.   These educated guesses are like azimuths from a compass--they assist in maintaining direction and are checkpoints for testing your findings.

For convenience we refer to the educated guesses as sub-issues.   There is no procedure for specifying sub-issues, but the result of the specification can be illustrated by example.   Assume that you are working with the following issue:

What causes poor synchronization of artillery and mortar assets with maneuver task forces?

Your first educated guess might be that the causes can be traced to poor integration of the Fire Support Officer (FSO) during the planning process and poor management of the assets.   You are probably right, but that is still too broad to guide your data collection.   So you break the causes down further by repeatedly asking yourself "If I were at the rotation, what evidence would I look for?"   For example:

Sub-issues related to integration of FSO in planning process

Is FSO present for TF commander's intent?

Does TF commander specify the role of fire support (e.g., echelon to weight and priorities of targets)?

Is FSO involved in war-gaming OPLAN?

Does TF commander rehearse fire support plan?

Sub-issues related to management of fire support:

Does FSO use fire support execution matrix?

Is matrix event driven (vs. time-based)?

Do mortars and artillery use the same set of target numbers?

Is fire support represented on the Decision Support Template?

Is FSO located with the command group during battle?

Sub-issues related to performance:

How many casualties are inflicted by indirect fire?

How many preplotted fires are executed?

Since selecting sub-issues to study usually requires detailed expertise in the subject, there are precious few people who can tell you that you have selected the wrong ones. The important thing is to make the sub-issues explicit. If others do not want to follow the path you chart, they can get their own azimuth.

Select Sources for Sub-Issues:

The methodology section of a research plan identifies the types(s) of data that will be gathered and used to examine the research issue. This exercise will demonstrate the selection of pertinent data sources for a given issue and corresponding sub-issues.

When you identify sub-issues, you should not limit yourself to questions that can be addressed completely from the CTC archive. Some sub-issues may require having a representative on site during a focussed rotation, but some archive data will almost always be relevant to at least some of the sub-issues. The Overview of Archive Sources is intended to help you select sources that can contribute information about sub-issues. Practical Exercise __ illustrates how the overview relates to this important early step in planning your research.

Practical Exercise 2: Selecting Sources for Sub-Issues

The table below shows the sub-issues that relate to the synchronization issue. Refer to the Overview of CTC Sources to identify sources which might give you information related to each sub-issue. List the sources for each sub-issue.

Issue: What causes poor synchronization of artillery and mortar assets with maneuver task forces?	
Research Approach: Case study of five rotations at NTC.	
Sub-Issue	Archive Sources
Is FSO present for TF commander's intent?	
Does TF commander specify the role of fire support (e.g., echelon to weight and priorities of targets)?	
Is FSO involved in war-gaming OPLAN?	
Does TF commander rehearse fire support plan?	
Does FSO use fire support execution matrix?	
Is matrix event driven (vs. time-based)?	
Do mortars and artillery use the same set of target numbers?	
Is fire support represented on the Decision Support Template?	
Is FSO located with the command group during battle?	
How many casualties are inflicted by indirect fire?	
How many preplotted fires are executed?	

Issue: What causes poor synchronization of artillery and mortar assets with maneuver task forces?	
Research Approach: Case study of five rotations an NTC.	
Sub-Issue	**Archive Sources**
Is FSO present for TF commander's intent?	Take Home Package (Fire Spt and Cmnd & Control) Video AAR
Does TF commander specify the role of fire support (e.g., echelon to weight and priorities of targets)?	Orders and Graphics (paper and digital)
Is FSO involved in war-gaming OPLAN?	Take Home Package (Fire Spt and Cmd & Control) Video AAR
Does TF commander rehearse fire support plan?	Take Home Package (Fire Spt and Cmd & Control) Video AAR
Does FSO use fire support execution matrix?	Take Home Package (Fire Spt and Cmd & Control) Video AAR
Is matrix event driven (vs. time-based)?	Take Home Package (Fire Spt and Cmd & Control) Orders and Graphics
Do mortars and artillery use the same set of target numbers?	Mission Db: Indirect Fire Casualty Assessment Target
Is fire support represented on the Decision Support Template?	Orders and Graphics
Is FSO located with the command group during battle?	Take Home Package (Fire Spt and Cmd & Control) Video AAR Battle Replay
How many casualties are inflicted by indirect fire?	THP BDA (paper and automated) BDA Db Mission Db: Indirect Fire Casualties
How many preplotted fires are executed?	Mission Db: Indirect Fire Missions

Research Method--Procedure

The general rule is that the data determine the research method. Data is defined as those facts that any particular situation afford or gives to an observer. Research methodology is then being able to figure out how to extract meaning from facts by using certain approaches.

There are various types of research methods depending on the data that are being examined. Each type of data lends itself to a particular procedure for collecting and examining the data. The nature of the CTC data archived at ARI-POM primarily rely on descriptive research designs; this section will focus on such methods.

Descriptive Studies:

With all of the data available in the archive and the computer data bases, several types of research methods can be used to exploit the data and answer questions posed by a researcher. When a researcher desires to understand a problem of "what exists" or "what existed", he or she would use a descriptive research technique to obtain the answer. This technique lends itself quite nicely to the type of problem statements and hypotheses that are normally studied at the CTC Archive.

In descriptive research the researcher observes, counts, or in some way measures the frequency of appearance of a particular variable in a particular setting. For instance in a descriptive study the problem might be: What is the rate of TOW firing in range bands from one to 500 meters? In this example no attempt is made to examine a relationship between variables; problem requires only a "bookkeeping" procedure. If however, the problem were worded: Are TOWs more likely to fire at distances less than 500 meters than the 105MM tank main gun?, then it would involve the relationship between variables.

Another example of a descriptive research study would be the study of counter-reconnaissance and success of units at the CTCs. A problem statement for such a study may be: During defensive operations, opposition forces quickly find and exploit the weaknesses in a task force's defensive position. This problem statement may have a hypothesis of "Task forces that reinforce their scouts in the security area are more successful in the defense then units that do not." Such a question can be easily studied using the descriptive technique and the data contained in take home packages, AAR tapes, and the orders and overlays of the units studied.

There are several types of studies that may be used to answer problem statements. In this module you will cover case studies, trend studies, comparative studies, and content analysis.

Use the Hamza and Banks (1987) ARI study for this exercise. This exercise will identify some characteristics of a research study using a descriptive research design. Read through the report and write in your answer to the questions below. Answers are on the next page.

The descriptive nature of this study is first found in the Abstract. It is also found in the Executive Summary, "Procedure:," p.vii.

1. Research statement.
   Q: What is the purpose of this study?

2. Methodology.
 a. Q: What pertinent CTC data sources were used for this study?

 b. Q: What historical data were used for comparison?

 c. Research is composed of a series of operations, and it is necessary to convert variables from an abstract or conceptual form to an operational form. Operationalizing variables means stating them in an observable and measurable form. An operational definition is specific to the study, and the reader is required to accept this definition, however different it may be from their other knowledge, while considering the logic of the present study.)
    Q: What variables were operationalized in the study?

 d. Q: What sample was used in the study?
       You've already answered this in P.E. 1

 e. Q: What 3 factors were examined in relation to fratricide?

3. Results.
   Q: How did the NTC rate of fratricide compare with historical results?

Feedback to Practical Exercise 3:   Descriptive Study With Historical Context

1.   Research statement.
     Q: What is the purpose of this study?
          A: The last sentence of the introduction, where "purpose" is given: ". . .to determine the extent to which fratricides occur at NTC. . ."

2.   Methodology.
  a. Q: What pertinent CTC data sources were used for this study?
          A: Digital data recorded from the NTC instrumentation system were used. See the Abstract and the Executive Summary "Procedure" for information on how the authors selected data sources.

  b. Q: What historical data were used for comparison?
          A: NTC fratricide data were compared with historical data from World Wars I and II, the Korean Conflict, and the Vietnam War.

  c. Q: What variables were operationalized in the study?
          A: 1. Direct fire fratricide   2. MILES pairing
               3. Fratricide

  d. Q: What sample was used in the study?
          A: Fratricides, as operationally defined, and as obtained from the NTC instrumentation system were presented according to history (of 39 battalions in 206 missions during 1985-86), according to training period, mission type, and range. (See p.vii.) This arrangement can also be determined by reading the next section, "RESULTS."

  e. Q: What 3 factors were examined in relation to fratricide?
          A: Mission type (offensive/defensive) range (100-meter bands), and training days (1st period or early period of the rotation vs. 2nd or later period of the rotation.

3.   Results.
     Q: How did the NTC rate of fratricide compare with historical results?
          A: Shrader examined friendly fire from four wars. Only the data from "ground" incidence (direct fire) can be used to compare with the ARI study. He found that two percent of all casualties from the four wars sampled were from friendly fire. Only 0.4 percent fratricides were caused from direct fire. Therefore, fratricides at the NTC are roughly seven times higher than would be expected from historical data.
     Q: Which factor(s) related to fratricides?
          A: Mission and range.

Case Studies

The study on fratricide (Hamza & Banks, 1987) described the rate of fratricides at the NTC. Based on findings from a historical study, conclusive findings on the rate of direct fire fratricide at the NTC were made and only probable factors contributing to friendly fire were drawn. However, no conclusive statements could be made that explain why fratricides occurred. The findings suggest the rate warrants further investigation. The ultimate research question would address why fratricides occur. Before conducting such a study it might be valuable to examine fratricides in greater depth than the first study. Only one data source was used -- the NTC mission data base. Other data sources may shed additional light on the problem.

An indepth study of a given problem which uses all relevant data sources, is referred to as a Case Study. In it, the researcher will study the problem and attempt to find all of the variables that are important to the subject. The emphasis is on understanding why something occurs and how it changes under different condition of environment, units, training, and tactics. Often times case studies attempt to explore in order to gain a full understanding of the subject and do not necessarily have a clearly defined focus.

Practical Exercise 4: Case Study

ARI has conducted one case study using NTC data entitled "Case Study Functional Application of 2A" (Root, 1988). This method was used as a mechanism to demonstrate how a unit performance measurement system could be utilized. Data from four NTC data sources were used to examine the performance of a unit for a deliberate attack mission. Pages 2-8 contain the analysis for the deliberate attack mission. Extracts from the four data sources-- digital data (pgs 9-16), firing activity chart (17-21), THP (24-29), Communication Tape (32-61) are provided to demonstrate the method used in this study.

For this exercise, a finding will be extracted from the analysis section in the Root (1988) study; **you will be told which one of the four data source extracts the information was drawn**. Read the section; locate and underline the source of information supporting the analysis. Note that in many instances, the findings in the analysis were based on data derived from more than one data source; you need only be concerned with the one data source identified.

For example:
    On page 2 of the <u>analysis</u>, second sentence reads:
        "The scouts had halted short of the obstacle and were
        able to offer the task force no information regarding
        either the obstacle or OPFOR dispositions. This ensured
        that everything the task force found on the objective
        would be a surprise."
    Data source to examine: Take Home Package (THP)

    The supporting data for this analysis was found in the THP;
you would read the THP section starting on pg. 24 until you find
the supporting data (on page 25, 3rd sentence from the top). You
would underline:

    ...obstacle network. <u>The scout platoon did not position
    itself adequately to provide observation and information of
    enemy dispositions; therefore, the task force engaged the
    enemy with insufficient intelligence.</u> The advance...

---

1.   Finding: "...there were no rehearsals conducted."
     Data Source to examine: Take Home Package

2.   Finding: "Team A would force a breach 30 minutes later,
     during which time <u>it was hit with 1,945 artillery rounds</u>
     and lost every officer in the company." (find the
     underlined only)
     Data Source to examine: Take Home Package

3.   Finding: "The Scouts, which had been sent forward during
     the night, ran into an OPFOR security BMP and went into a
     hasty defense three kilometers short of the objective."
     Data Source to examine: Battle Replay

4.   Finding: During the move, the TOC was hit with an NBC
     attack which negated any impact it might have had on the
     battle.
     Data Source to examine: Communications Tape

5.   Finding: "In one case, Team A called in a correct grid
     only to have two digits transposed when it was relayed by
     the battalion commander back to the artillery. The FSO
     transposed two other digits when he relayed it back to
     the ALO controlling the CAS."
     Data Source to examine: Communications Tape

Feedback to Practical Exercise 4: Case Study

1. Finding: "...there were no rehearsals conducted."

    Team A: No rehearsals were conducted for such drills as
    breaching obstacles or actions on combat.
    Team B: Limited rehearsals and actions upon contact
    were conducted prior to the operations starting.
    Team C: No rehearsals were conducted to support this
    operation.
    Team D: No remarks on rehearsals.

2. Finding: Team A would force a breach 30 minutes later, during
    which time it was hit with 1,945 artillery rounds and lost
    every officer in the company.

    "The unit was hit with a total of 1,945 rounds of enemy
    artillery."

    In this analysis five sources were examined that made this
    full statement possible:

Information	Data Source
• Team A's breach	THP
• Time of breach	Replay and commo tapes
• # of artillery rounds	THP
• # of officers killed	THP
• time officers were killed	Replay and commo tapes

3. Finding: "The Scouts, which had been sent forward during the
    night, ran into an OPFOR security BMP and went into a hasty
    defense three kilometers short of the objective.
    A: Pg. 10: Scouts   (This finding was also supported by THP
         data.)

4. Finding: During the move, the TOC was hit with an NBC attack
    which negated any impact it might have had on the battle.

    A: Start on pg 34:
        (Muffled reference to persistent nerve)
        Roger. Which element?
        (Muffled)
        Roger. Which element? Which element has just been hit
        with persistent nerve?
        The TOC! The TOC!
        Roger. OK, get decontaminated.

Feedback to Practical Exercise 4: Case Study (cont.)

5.   Finding: "In one case, Team A called in a correct grid only
     to have two digits transposed when it was relayed by the
     battalion commander back to the artillery. The FSO transposed
     two other digits when he relayed it back to the ALO
     controlling the CAS."
     A: Alpha, Alpha. This is November. I need a grid for the
          artillery... See commo tape transcript--pages 34-35.

Trend Studies

Trend analysis examines an issue over time and lends itself to the study of how a solution to a problem, such as a doctrinal, training, or equipment change, has affected a problem. Trend analysis is also useful in predicting a future result based on a past trend. Trend studies can examine a single variable across a period of time (e.g. percent of casualties DOW from 1985 to 1990) or a number of variables that relate to a common variable (e.g. average time taken for casualty to receive medical treatment for casualties DOW vs. casualties returned to duty).
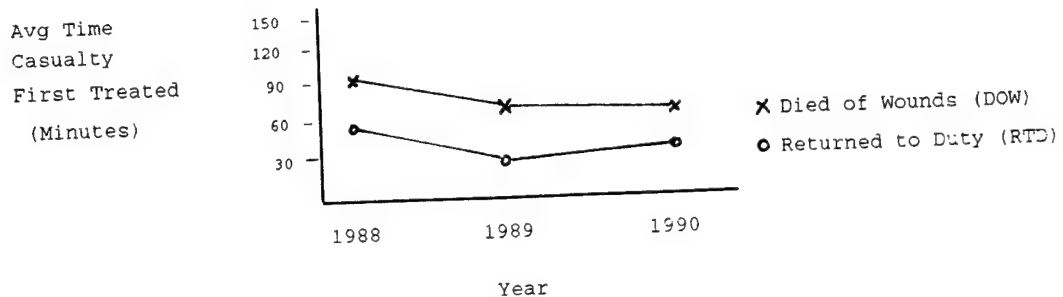
For another example of trend analysis we again use the task force in defense. Let's say that in March 1990 doctrine and training changed from only using scouts in the security area to that of reinforcing the scouts. The researcher in this case may use trend analysis to study the number of enemy reconnaissance elements that were killed in the security area before the change in doctrine and training with that after the change; he/she would then compare the results with the success of units to conduct a defense.

Practical Exercise 5: Trend Study

Use the Johnson (1992) ARI study for this exercise (Trends in Weapon Systems Performance: The Importance of Command Emphasis). This exercise will identify the characteristics of a Trend research study. Read through the report, locate and write in your answer to the questions on the next page.

1.   Research Statement.
     Q: From the research statement or purpose of study,
           identify what variables are being related?

2.   Methodology.
     Q: What pertinent CTC data source(s) were used for this
     study?

     Q: What time periods were examined?

     Q: What changes occurred in the NTC environment between
     1985 and 1990?

3.   Results.
     Q: What is the relationship between year and number of
     rounds fired for TOW performance in the offense?
     Describe in words and plot findings in the chart.

```
              3.5   -|
      TOW     3.0   -|
    rds/sys   2.5   -|
    rds/kill  2.0   -|
              1.5   -|
              1.0   -|
              0.50  -|
                     |_____
                     85-86      87-88      90
                              Year
```
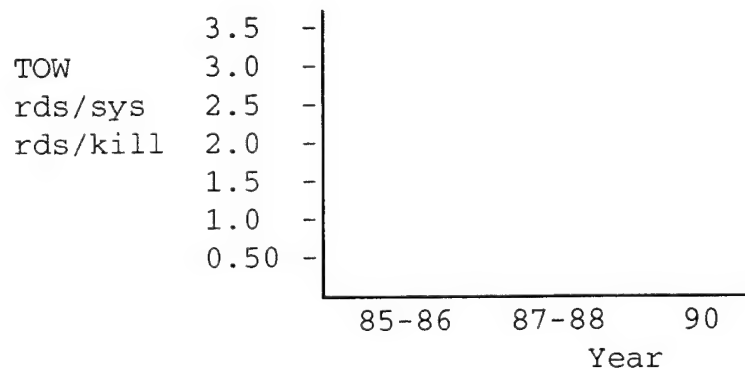
Check your answers on the next page.

Feedback to Practical Exercise 5: Trend Study

1. Research Statement.
    Q: From the research statement or purpose of study, identify what variables are being related?
    A: Found in the first sentence of the introduction:
        1. change in weapon system performance and year
        2. command emphasis and change in performance

2. Methodology.
    Q: What pertinent CTC data source(s) were used for this study?
    A: (1) THP--Battle Damage Assessment (BDA) data
        (2) Digital data (of NTC instrumentation system)

    Q: What time periods were examined?
    A: Three points in time: 1985-86, 1987-88, and 1990.

    Q: What changes occurred in the NTC environment between 1985 and 1990?
    A:
    1. Training scenarios are more complex.
    2. Changes in the size of the OPFOR: the defending OPFOR increased from a motorized rifle company plus to a motorized rifle battalion minus; the offensive OPFOR added a division reconnaissance element.
    3. In a defensive position, the amount of frontage expected to be defended has increased from three to four kilometers in 1985 to seven to nine kilometers in 1990; avenues of approach which the friendly forces must cope has increased from two in 1985 up to four in 1990.
    4. The ratio of friendly weapon systems to OPFOR weapon systems has decreased.

3. Results.
    Q: What is the relationship between year and number of rounds fired for TOW performance in the offense?
    A: TOWs had an increase in the average rounds fired per weapon system per mission from 1985 to 1990, however, there are more rounds per kill fired in 1990 than in 1985.
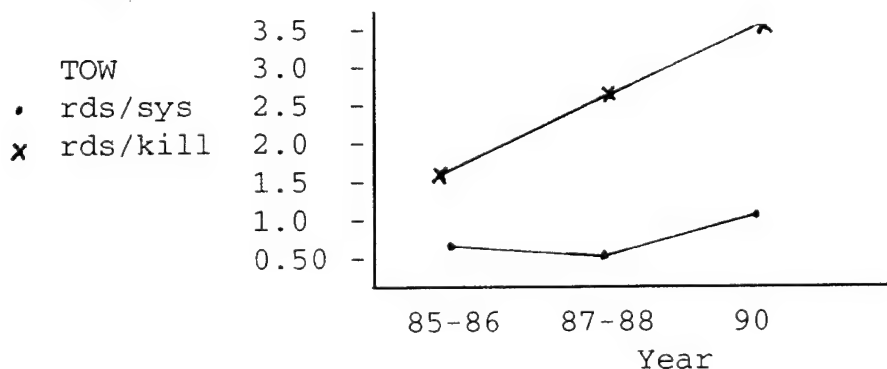
Comparative Studies

CTC data are often examined by comparing different groups on measures of performance outcome. For example, some studies have compared units that differed in force structure and unit organization such as M60/M113 vs. M1/Bradley units, or reserve component and active component. The measures of outcome are derived in the same way for all groups examined in the comparison.

Groups to be compared arise from "natural variation" or "planned variation". Planned variation results from an experimenter controlling which units perform under specific conditions (called treatments). By assigning units to treatments at random, the experimenter controls for the effects of other factors, leaving the planned variation to account for observed differences.

Comparison of groups arising from natural variation leads to ambiguous conclusions. One can always speculate that some other characteristics associated with the grouping results in the difference between the groups. Such studies can, however, lead to inferences that can be confirmed by further, planned, studies.

The data in the CTC Archive lead almost exclusively to comparisons of groups arising from natural variation. Some "focus rotations" (e.g. studying new equipment) are close to planned studies, except that the unit implementing the change may not be a randomly chosen unit and may be specially suited to the test.

Practical Exercise 6:   Comparative Study

Use the Keesling et al. (1992) ARI study for this exercise (Determinants of Home-Station Training at the CTCs). This exercise will help you understand the characteristics of a comparative research study. Read through the summary report, locate and write in your answers to the questions below.

1.   In this study two comparable units are known to differ in their method of drawing equipment. Based on this known difference, the study examined what the "Extended Draw" group did that the "Typical Draw" group did not do.
    Q: What did the extended draw group do differently than the normal draw group?
    Extended Draw

2.   The two groups identified here were the result of
"natural variation" rather than "planned variation".   Units in
one group decided to extend the draw, the others did not.
There may have been other characteristics of the group that
extended the draw that could explain their performance at NTC.
For example, the leadership may have differed.

   Q: How did performance differ between the extended draw and
typical·draw groups?
     <u>Extended Draw</u>

Check your answers on the next page.

Feedback for Practical Exercise 6:   Comparative Study

1.   Q: What did the extended draw group do differently than the
      normal draw group?

      Extended Draw
      a.   Extended drawing time over weekend.
      b.   Accepted non-defective vehicles only.
      c.   Verified MILES

2.   Q: How did performance differ between the extended draw and
      typical draw groups?

      Extended Draw
      a.   Had higher OR rates (fig. 3-23)
      b.   Had more vehicles in later missions
      c.   Successful on last FOF mission

Content Analysis

Content analysis is a technique of using qualitative data, such as OC comments, as quantities. It is accomplished by coding comments in such a way that can be quantified by the researcher for further investigation through trend analysis or correlation analysis. Using this technique, the researcher can place a great number of different, but related OC comments, into catagories for ease of examination and to test research questions.

An example of this is a study prepared at ARI on performance of mortar fire support at the NTC and its relationship to training doctrine. The researchers were interested in if OC comments could be used in relation to the ARTEP to determine the training level of units over several rotations (14 in this case). Comments were sorted into pairings with their related ARTEP tasks (i.e. Plan Fire Support, Move, Control Fire Support, etc.). Comments were then coded as positive, negative, or not mentioned. Using the OC's comments in this manner, the researchers were able to make a judgement on the overall training of mortar platoons at the NTC.

Practical Exercise 7: Content Analysis

1. Method of Approach.
   Q: What data source was used for this study?

   Q: What were the major categories for organizing O/C comments on Mortar Performance?

   Q: How did the researchers derive at the subcategories under the main categories?

   Q: How many subcategories were derived?

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2.   Results.
       Q: How did the OC groups compare on comments related to
              priority of fires and targets?

3.   Discussion.

            · Implications section
               Q: Who did the authors identify as the person
                      responsible for improving the quality of target
                      lists?

Feedback to Practical Exercise 7

1.   Method of Approach.
     Q: What data source was used for this study?
     A: THP: Mortar Performance Trend section

     Q: What were the major categories for organizing O/C
          comments on Mortar Performance?
     A:
          Overview (added)
          Planning
          Execution

     Q: How did the researchers derive at the subcategories under
          the main categories?
     A: Each comment was listed separately under the applicable
          main category; similar comments of high frequency were
          then grouped. Subcategories were established using high
          frequency groupings of essentially identical comments.

     Q: How many subcategories were derived?
     A:
               Overview=1
               Planning=4
               Execution=9
                   Total=14

2.   Results.
     Q: How did the OC groups compare on comments related to
          priority of fires and targets?

     A: Mechanized Infantry OC group tend to be more negative:

                    Positive   Negative
          Armor   12   1
          Mech   10   7

3.   Discussion.

          Implications section
          Q: Who did the authors identify as the person
               responsible for improving the quality of target
               lists?
          A: Implications: pg 14, 3rd paragraph, last sentence--
               " The responsibility for developing the target list
               belongs to the FSO. He must ensure that it is
               complete."

Prepare The Research Report

Purpose: This module covers the basic elements to be included in a research report. The module also includes briefings.

Resources:

- Combat Analyst Work Station with Word Perfect Software.

- Facilitators who will help with basic procedures.

- Word Perfect documentation and work books.

Estimated Time To Complete: 1 hour for the module.

Certification: You will check your work against Feedback Sheets and then show your results to a facilitator.

How To Proceed: The module has Practical Exercises and a Skills Assessment. You have the option of completing the Skills Assessment prior to working on the full module if you feel that you have the requisite skills to complete it correctly. If the Skills Assessment is correctly completed, you may skip the rest of this module, otherwise, first complete the Practical Exercises, and then complete the Skills Assessment. Permission to skip the Practical Exercises may only be granted by a facilitator.

Performance Objective: Using the Combat Analyst Workstation and the required software, prepare a briefing to report the results of your independent research.

Skill Assessment: The Skill Assessment is on the next page. You will use the data you have generated for your research issue.

Skill Assessment:

After you complete the research on your issue, prepare a briefing. The briefing should take about 15 minutes.

At a minimum prepare slides to cover the following:

- Issue

- Sample (rotations and missions)

- Measures

- Results (If possible, prepare at least one graphic.)

- Conclusions (If possible, relate findings to a DTOMLS area.)

After you have completed the briefing and slides, they should be reviewed by a facilitator before you give your presentation.

Prepare The Research Report

A written report should be prepared which reviews the entire process of your research. The report will be clearly written in compliance with military standards. The following outline shows the content of the report.

- Introduction.

The first section of the report clearly states the purpose of the study (Issues). The purpose of the study goes beyond the subject matter. Why is the subject matter what it is? What are you trying to achieve? This section of the report should also review why the study was done, who might use the results, and what agencies were involved in the study.

- Methodology.

This section of the report reviews how the study was conducted. It should include the sample (such as CTC, number of rotations, and type of missions), the measures, and the research procedure.

- Results.

This section of the report contains results of the study. It has the tables, figures, and charts which summarize the study results.

- Discussion.

This section of the report contains an explanation of the results. It should identify causes.

- Conclusions.

This section of the report contains key implications of the study. It highlights the main findings of the research and shows the implications for action based on the results. The conclusions should be related to Doctrine, Training, Organization, Material, Leadership, Soldiers (DTOMLS).

The report should be written in clear, precise language that is appropriate to the audience. Appendices, containing more detailed information which supports the conclusions in the report, can be attached.

A briefing should be prepared for presentation to appropriate decision-makers so that recommendations can be considered. The presentation should be brief and to the point. Write out the one to five main points to serve as a framework for the briefing.

Throw out all the words which don't add anything. Determine how long the briefing is going to be and distribute the time among the main points, reserving five to ten percent of the time for both the introduction and summary. Estimate how many supporting arguments or points can be made for each of the main points in the time available. If a supporting point takes less than a minute, it's probably not worth making. If it takes more than three, it probably ought to be a main point. The facts that support your main points should be accurate and relevant. You should prepare briefing slides to support the briefing.

Practical Exercise (P.E.) 1 supposes that you want to place a chart in the Results section of your report. The P.E. will show you how to retrieve a chart, that you created in the Charts module, into the body of your report. Use Word Perfect for the P.E.

P.E. 1 Import a chart

Enter Word Perfect	•Move the cursor to the Word Perfect Icon and *double click* the left button.
Create a Graphic	•Move the cursor to Graphics and *click*. •Move to Figure and *click* and then press *Enter* to create a graphic figure.
Import the Chart	•Type *"1" or "F"*(ilename). •Enter the filename to be imported: *"C:\FL\BLINE(Your Initials).CGM"*, i.e. "C:\FL\BLINEJRG.CGM".
Position the Chart	•Type *"6" or "H"* to select the Horizontal Position. Type *"4" or "F"* for a full chart.
Edit the Chart if needed	•Type *"9" or "E"*(dit) to check the chart. No changes should be needed. Press *"F7"* twice to return to the document.
View the Chart	•To see how the Chart will appear in your document, move the cursor to File and *click*. •Select "Print". At the Print screen press *"6" or "V"* to View the document. Press *"F7"* to return to the document.
Print the Document	•Move cursor to File and *click*. Select "Print". •At the print screen press *"1" or "F"* to print the Full Document.
Exit	•Press *"F7"*. Type *"N"*(o) as you do not need to save the document. Type *"N"* again to return to a blank document screen.

Check your printed document against the Feedback Sheet.

NATIONAL TRAINING CENTER

Strength

Bar/line chart titled "NATIONAL TRAINING CENTER". Y-axis "Strength" from 0 to 60. Line (Blue Start Strength) values: 54, 49, 50, 53, 52, 52. Bars (Blue End Strength) values: 11, 5, 7, 6, 3, 39.
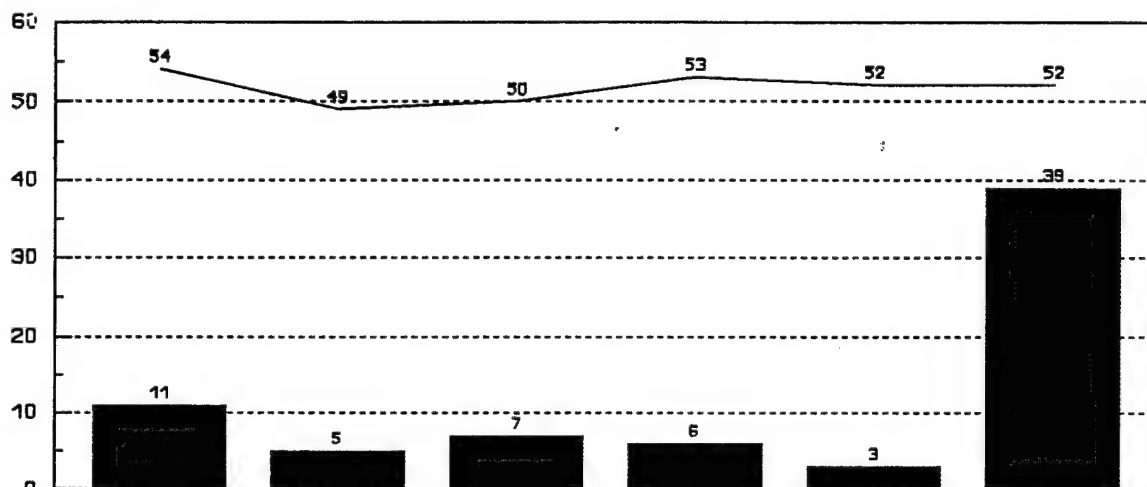
X-axis labels (Mission): Counter-Attack, Defense In Sector, Deliberate Attack, Deliberate Attack, Deliberate Attack, Hasty Attack

Mission

Blue Start Blue End
Strength Strength

Blue Force was a National Guard Unit

Continue to the next page.

In the next P. E., using the information below, you will write a conclusions briefing slide. The slide may be prepared by hand or you may follow the instructions in the Create Slides module to write the slide.

Possible implications for training are:

Crew level training must further stress the importance of target identification, particularly at near and far ranges.

Platoon Leader training must further emphasize fire control and distribution to insure that crews shoot where they should.

Company level training must increase communication and coordination between adjacent elements.

Command and Staff level training must insure the dissemination of information down to the platoon leader and crew levels.

P.E. 2: Create a Conclusions Briefing Slide

> The slide is titled "Conclusions". The Subtitle is "Training Needed". The slide should have at least four main points, one for each level of training, and each main point should have at least one subpoint. Be sure to include your initials in the lower left hand corner to identify your slide. If you made your slide using the Word Perfect software, print your slide. Compare your slide with the Feedback Sheet on the next page.

CONCLUSIONS
Training Needed

- Crew Level
  - -- Target Identification
  - -- Near and Far Ranges

- Platoon Leader Level
  - -- Emphasize Fire Control and Distribution
  - -- Insure Crews Shoot Where They Should

- Company Level
  - -- Communication and Coordination Between Adjacent Elements

- Command and Staff Level
  - -- Dissemination of Information to Lowest Levels

JRG

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If your slide matches the Feedback Sheet or is approved by a facilitator, you have successfully completed this module. If you have any questions, ask one of your colleagues who has finished this module or one of the facilitators. The Skills Assessment is based on the slides you prepare to report the results of your independent research.

USER'S GUIDE TO THE ARI-NTC MISSION DATABASE
(Revised for 90-01 forward databases)

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Revised
31 January 1991

Army Research Institute for the Behavioral and Social Sciences

USER'S GUIDE TO THE NTC MISSION DATABASE

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USER'S GUIDE TO THE NTC MISSION DATABASE

1.0 Purpose.

This document is intended for users of the ARI-NTC mission database. Its purpose is to familiarize the user with the current database structure and provide examples of INGRES queries for the researcher when doing analysis with the training data. These examples may help the reader understand how to construct their own queries once they have established an understanding of the mission databases. Appendix A contains a description of the NTC mission database formats. If the reader is not familiar with the structure and content of the mission databases, it would be of value for the reader to refer to them now, before working through the exercises.

We shall explore the principal linkages between the INGRES tables in the data base, that is the Player Identification Number (PID), Logical Player Number (LPN) and the Time of an event. It should be noted that our data bases are 'event driven', because all the entries in the Fire Event Table (FET), the Pairing Event Table (PET), and the Indirect Fire Missions Fired (IFMF) result from actions initiated in the training exercise.

It is our desire to provide a template for use when the researcher designs a plan of analysis for a specific research issue. It is assumed that the reader will be familiar with using 'iquel' (an INGRES utility for interactive use of a database) and have a knowledge of the particular training rotation they wish to investigate ('iquel' is discussed in Ingres Release 5.0 for the VMS operating system Volume I, Ingres Menu Users Guide, Chapter 7 of the INGRES Reference manuals).

2.0 Gaining access to ARI databases.

If you are new to ARI-POM, and do not have your own computer account on our VAX 11/780 then see our R & D Coordinator for a user account and password. The login procedure is:

    Username:XXXXXXXX
    Password:XXXXXX

At the '$' prompt, enter the following:

    $ quel <mission.ing >mission.lis aridms
    $ print mission/delete

These commands will print a catalogue of the mission databases for your reference. (Output is at the system line printer.)

mission table

```
+-----------------+-----------------+--------+-----+-------------+----------+--------------+-----+---------+
|mstart           |mend             |mhisto|mseg|mtype        |msubtype  |morg          |mtf|mdbname  |
+-----------------+-----------------+--------+-----+-------------+----------+--------------+-----+---------+
|03-Dec-89 06:50:00|03-Dec-89 07:30:00|9003A0|  15|Hasty Attack |Mvmt/Mnvr |1-008 X 1-032|C_ |N903C_03|
|03-Dec-89 07:30:01|03-Dec-89 09:10:00|9003A0|  15|Hasty Attack |Objective |1-008 X 1-032|C_ |N903C_03|
|01-Dec-89 17:02:12|01-Dec-89 18:54:16|9003A0|   9|Defend       |Ctr-Recon |1-008 X 1-032|C_ |N903C_02|
|01-Dec-89 20:03:21|02-Dec-89 02:06:31|9003A0|  10|Defend       |Ctr-Recon |1-008 X 1-032|C_ |N903C_02|
|02-Dec-89 03:19:53|02-Dec-89 05:15:16|9003A0|  11|Defend       |Ctr-Recon |1-008 X 1-032|C_ |N903C_02|
+-----------------+-----------------+--------+-----+-------------+----------+--------------+-----+---------+
```

Any of the databases listed may be accessed by entering the following command from the monitor:

    $ iquel dbname

where dbname is a valid database name from the catalogue listing.

A second, and simpler method of accessing the mission databases is to use the Training Research Automated Catalog System (TRACS). (See Figure 1.) Any and all missions can be queried through the TRACS system, and the user has the added functionality of knowing what type of mission, the type of data used to create it, terrain information, equipment used and a number of other selection criteria about the database. See TRACS User's

Figure 1 Methods of accessing Mission Databases.

Manual for further information about the program and the selection criteria available to the researcher.

3.0 The Player: PID and LPN

We begin our discussion with an explanation of the player identification number, the PID. (Note here that the title 'player' actually refers to a specific tank crew, a TOW squad or a squad in an armored personnel carrier). It is a three character acronym for a player's company and platoon. Consider the player name 'A13'; The first character is alphabetic, and therefore we may assume the player belongs to 'A' company. If the player name were designated as '13A', we can be led to believe that the player is from a different battalion (i.e. a cross attached unit). The position within the name of the alpha character describes that player's task force association. The '1' in A13 describes the players platoon. The '3' identifies the squad within the platoon. With this information, we see that 'A13' stands for 'A' company, first platoon, third squad.

The rules are:

    for indigenous task force - A13
                        A = company

```
                                    1 = platoon
                                    3 = squad
         for cross attached units  - 13A
                                    1 = platoon
                                    3 = squad
                                    A = company
```

There are a number of notable exceptions to the above rules, which will be addressed now. Leaders will have a six in their name as in H66 (battalion commander), H65 (second in charge), B66 (B company commander), B65 (B company second in charge) and so on. Scout teams are given a name beginning with 'SC' and then a numeric digit to distinguish between squads (SC1, SC2, etc.). Anti-tank squads (using TOWs) are given names beginning with an 'E'. A partial list of anti-tank player names would be E11, E12, and so forth. Player identifications are not unique, as both Opfor and Bluefor players can have the same PID (as in H66, the commander of each force). In order to uniquely determine a player, we use the Logical Player Number or LPN, which is the player's sequence number in the Player State Initialization Table (PSIT). Each player in the PSIT is assigned a unique sequence number, and can be tracked with this number throughout the mission.

4.0 The Tables: Event data vs. Static data.

Lets begin our discussion here with a distinction between 'event' and 'static' data. Events are those data that occurred in the field of play, such as a main gun round being fired. Think of them as 'what's going on' during a training mission. Static data defines the condition of the field and players during a training mission. Think of static data as 'what it looks like'. We will now expand on these concepts.

A good rule of thumb for recognizing an 'event' table is the presence of a time variable. In our database, the following tables have a time stamp with each event:

1)	Fire Event Table	(FET)
2)	Pairing Event Table	(PET)
3)	Indirect Fire Missions Fired	(IFMF)
4)	Indirect Fire Casualties Table	(IFCT)
5)	Minefield Casualties Table	(MCT)
6)	Communications Table	(CT)
7)	Ground Player Location Table	(GLPT)
8)	Air Player Location Table	(APLT)
9)	Player State Update Table	(PSUT)
10)	Unit State Update Table	(USUT)
11)	Control Measure	(CM)

All of the above tables can be linked logically by their time variable, and can give us a chronological view of the training exercise.

Static tables support the event tables. They contain the condition and or state of the troops at the start of the training

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exercise. The following is a list of the database's static tables:

1) Player State Initialization Table   (PSIT)
2) Unit State Initialization Table   (USIT)
3) Unit Type Table   (UTT)
4) Player Vehicle Weapon Table   (PVWT)
5) Indirect Fire Target Table   (IFTT)
6) Indirect Fire Group Table   (IFGT)
7) Control Measure Table   (CMT)

These tables help give the researcher an idea of the physical condition of the players and the battlefield during the training mission.

With a better understanding of Event and Static table types, let us now investigate how the researcher can utilize the information in the different tables to their advantage. We will begin with some elementary examples of querying the database and progress to move complex techniques.

For a first example, let us determine the side (Opfor or Bluefor) of a firee (person being fired at) in the PET. We will need to look at the LPN of the firee in the PET and match it to the LPN in the PSIT (See Appendix A for a description of the variables within each database table).

Examples: The Pairing Event Table.

4.1 The Pairing Event Table (PET) is considered to be the heart of the NTC research database. It is where the direct fire assessments are recorded on a player by player basis. Our first set of query examples will center around using the PET. We hope that these examples will provide a useful guideline for researchers.

Example one merely matches the PET to the PSIT using the firees' logical player number as the thread between the two tables.

Example One: Finding the Force Code of the Firee

QUEL COMMANDS:_____

```
1> /* PET example # 1:  Finding the force code of the firee (target) */
2> range of p is PET          /* Pairing Event Table             */

1> range of q is PSIT          /* Player State Initialization Table  */

1> retrieve (p.time,p.tpid,p.result,q.side)
2>     where p.tlpn = q.lpn    /* match on logical player number    */
3>     sort by p.time          /* maintain chronological order      */
```

```
+-------------------------+--------+--------+--------+
|time                     |tpid    |result  |side    |
+-------------------------+--------+--------+--------+
|  30-Nov-89 07:33:32  |C33  |H   |B    |
|  30-Nov-89 07:35:19  |FD2  |N   |B    |
|  30-Nov-89 07:35:48  |D50  |N   |B    |
|  30-Nov-89 07:39:47  |C66  |N   |O    |
|  30-Nov-89 07:41:46  |31A  |N   |B    |
|  30-Nov-89 07:43:45  |60A  |H   |B    |
|  30-Nov-89 07:43:53  |B34  |H   |B    |
|  30-Nov-89 07:44:18  |B34  |N   |B    |
|  30-Nov-89 07:44:30  |D24  |N   |B    |
|  30-Nov-89 07:46:45  |A16  |N   |O    |
|  30-Nov-89 07:47:45  |A65  |H   |O    |
|  30-Nov-89 07:52:15  |23B  |K   |B    |
|  30-Nov-89 07:54:34  |B60  |K   |B    |
|  30-Nov-89 07:55:59  |330  |N   |O    |
|  30-Nov-89 07:56:32  |313  |H   |O    |
     o
     o
     o
|  30-Nov-89 10:21:13  |433  |H   |O     |
|  30-Nov-89 10:21:18  |433  |H   |O     |
|  30-Nov-89 10:24:38  |C13  |N   |B     |
+-------------------------+--------+--------+--------+
```

(287 rows)
End of Request

The fields that are displayed are in the same order as they appear in the 'RETRIEVE' statement of the query. 'Time' refers to the time of the pairing event. 'TPID' is the targets player identification (the firee). 'RESULT' is the outcome of the engagement (H – hit, K – kill, N – near miss). 'SIDE' is the force code of the firee.

The last line of the query is a sort directive, which keeps the data in the same order as it occurred during the training exercise.

4.2. The next example builds upon the first in that we've added a third table to our query. We have used a technique called 'pivoting', which uses the PSIT to point to a third table. The following diagram for example two may help visualize this concept.
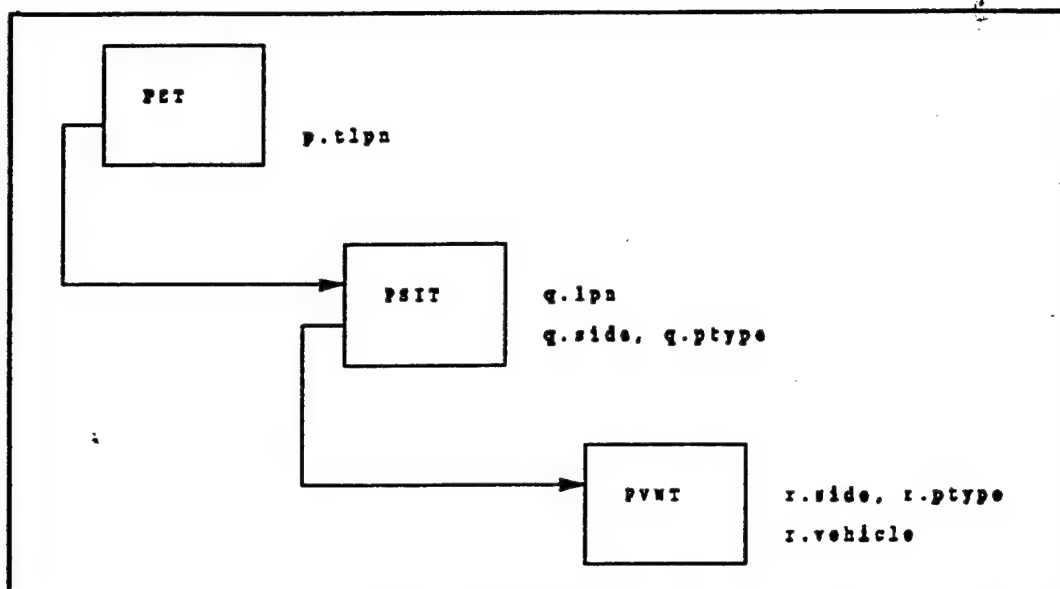
Diagram of example #2.

Example Two: Finding the Vehicle Type of the Firee.

QUEL COMMANDS: _____

```
1> /* PET example # 2: Finding vehicle type of firee using the */
2> /* PVWT (Player Vehicle Weapon Table)                        */
3> /* Note: some player types have more than one vehicle for a  */
4> /* given side/ptype combination.  The miles code in the PVWT */
5> /* can be used to qualify a singular vehicle in these cases.  */
6> /*                                                            */
7> range of p is PET       /* Pairing Event Table                */

1> range of q is PSIT      /* Player State Initialization Table  */

1> range of r is PVWT      /* Player Vehicle Weapon Table         */

1> retrieve (p.time,p.tpid,p.result,q.side,r.vehicle)
2>    where p.tlpn = q.lpn   /* match on logical player number   */
3>       and q.side = r.side /* match on player force code       */
4>       and q.ptype = r.ptype /* match on player vehicle type   */
5>    sort by p.time          /* maintain chronological order    */
```

time	tpid	result	side	vehicle
30-Nov-89 07:32:47	621	H	O	BRDM
30-Nov-89 07:33:32	C33	H	B	M60 A1/A3 Tank
30-Nov-89 07:35:19	FD2	N	B	Mortar
30-Nov-89 07:35:48	D50	N	B	M60 A1/A3 Tank
30-Nov-89 07:39:47	C66	N	O	Tank (T-72)
30-Nov-89 07:41:46	31A	N	B	Bradley
30-Nov-89 07:43:45	60A	H	B	Bradley
30-Nov-89 07:44:18	334	N	B	M60 A1/A3 Tank

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```
| 30-Nov-89 07:44:30 |D24   |N     |B    |M60 A1/A3 Tank |
| 30-Nov-89 07:46:45 |A16   |N     |O    |Tank (T-72)    |
| 30-Nov-89 07:47:45 |A65   |H     |O    |Tank (T-72)    |
   o
   o
   o
| 30-Nov-89 07:52:15 |23B   |K     |B    |Bradley        |
| 30-Nov-89 07:54:34 |B60   |K     |B    |M60 A1/A3 Tank |
| 30-Nov-89 07:55:59 |330   |N     |O    |BMP            |
| 30-Nov-89 07:56:32 |313   |H     |O    |BMP            |
+--------------------+------+------+------+---------------+
(381 rows)
End of Request
```

The last field, 'vehicle', comes from the PVWT and identifies the target vehicle's type.

4.3   Example three turns our attention to the firer, the player who pulled the trigger to cause the pairing. Because the NTC uses the MILES laser system for simulating engagements, many times the firer is unknown to the CIS computers. This is reflected in the data, as only approximately twenty percent of the pairing events have a known firer. When the firer is known, his LPN is recorded in the field 'flpn' of the PET, otherwise the flpn is zero. We can use this fact to find those 'matched' pairing events in the PET. Example three is similar to example one, except now we seek information about the firer.

Example Three: Finding Rows Where the Firer is Known

QUEL COMMANDS:_____

```
1> /* PET example # 3: Finding rows where the firer is known    */
2> range of p is PET          /* Pairing Event Table            */

1> range of q is PSIT         /* Player State Initialization Table */

1> retrieve (p.time,p.fpid,p.result,q.side)
2>     where p.flpn = q.lpn   /* match on logical player # (firer) */
3>        and p.flpn > 0      /* firers lpn is non zero            */
4>     sort by p.time         /* maintain chronological order      */
```

```
+--------------------+------+------+------+
|time                |fpid  |result|side  |
+--------------------+------+------+------+
| 30-Nov-89 07:52:15 |B34   |K     |B     |
| 30-Nov-89 08:06:59 |C12   |H     |B     |
| 30-Nov-89 08:16:01 |D33   |N     |B     |
| 30-Nov-89 08:21:32 |D23   |N     |B     |
| 30-Nov-89 08:21:58 |D23   |K     |B     |
| 30-Nov-89 08:22:03 |C13   |K     |O     |
| 30-Nov-89 08:34:01 |C33   |N     |B     |
| 30-Nov-89 08:34:26 |C33   |N     |B     |
| 30-Nov-89 08:56:47 |C12   |K     |B     |
```

7

```
| 30-Nov-89 08:57:58 |A65   |H     |O     |
+--------------------+------+------+------+
```
(10 rows)
End of Request

_____

   4.4 For the sake of completeness, example four parallels example
two, again with the exception that we are investigating the firer.
The three table query lists another variable in the PVWT, the
firer's weapon as defined by the MILES code in the PET and
translated by the PVWT.

   Example Four: Finding Rows Where the Firer is Known

QUEL COMMANDS:_____

```
1> /* PET example # 4: Finding rows where the firer is known and*/
2> /* determine the firer's vehicle and weapon types.          */
3> /* Note: here we can determine the side/ptype/miles of firer */
4> /* and thus we can make a unique match in the PVWT           */
5> /*                                                           */
6> range of p is PET      /* Pairing Event Table                */

1> range of q is PSIT     /* Player State Initialization Table  */

1> range of r is PVWT     /* Player Vehicle Weapon Table        */

1> retrieve (p.time,p.fpid,p.result,q.side,r.vehicle,r.miles)
2>    where p.flpn = q.lpn  /* match on logical player # (firer)*/
3>       and q.side = r.side     /* match on force codes        */
4>       and q.ptype = r.ptype   /* match on player type codes */
5>       and p.miles = r.miles   /* match on weapon codes       */
6>       and p.flpn >  0         /* firers lpn is non zero      */
7>    sort by p.time            /* maintain chronological order */
```

```
+--------------------+------+------+------+---------------+------+
|time                |fpid  |result|side  |vehicle        |miles |
+--------------------+------+------+------+---------------+------+
| 30-Nov-89 07:52:15 |B34   |K     |B     |M60 A1/A3 Tank |   12|
| 30-Nov-89 08:06:59 |C12   |H     |B     |M60 A1/A3 Tank |   12|
| 30-Nov-89 08:16:01 |D33   |N     |B     |M60 A1/A3 Tank |   12|
| 30-Nov-89 08:21:32 |D23   |N     |B     |M60 A1/A3 Tank |   12|
| 30-Nov-89 08:21:58 |D23   |K     |B     |M60 A1/A3 Tank |   12|
| 30-Nov-89 08:22:03 |C13   |K     |O     |Tank (T-72)    |   10|
| 30-Nov-89 08:34:01 |C33   |N     |B     |M60 A1/A3 Tank |   12|
| 30-Nov-89 08:34:26 |C33   |N     |B     |M60 A1/A3 Tank |   12|
| 30-Nov-89 08:56:47 |C12   |K     |B     |M60 A1/A3 Tank |   12|
| 30-Nov-89 08:57:58 |A65   |H     |O     |Tank (T-72)    |   10|
+--------------------+------+------+------+---------------+------+
```
(10 rows)
End of Request

_____

   4.5 In our last example using the PET, we use a technique that
allows us to look up both the firer and firee in the same query.

It may not be obvious to the researcher, but there is only one LPN field in the PSIT, yet both the firer and firee have LPN's in matched pairings in the PET.
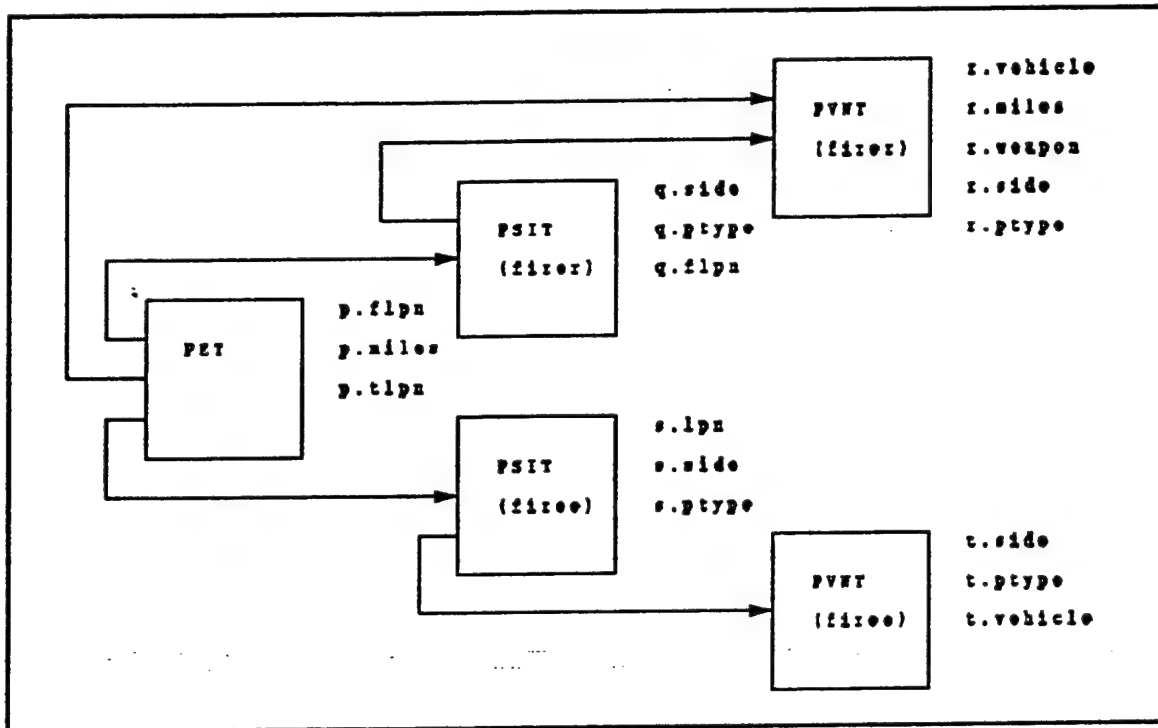
Diagram of Example #5.

Example Five: Combining the Queries in Examples 1-4.

QUEL COMMANDS:_____

```
1> /* PET example # 5: Combining the queries in examples 1 through  */
2> /* 4 we come up with a complete picture of the engagement        */
3> /*                                                                */
4> range of p is PET        /* Pairing Event Table                  */

1> range of q is PSIT       /* copy for the firer relationships     */

1> range of r is PVWT       /* copy for the firer relationships     */

1> range of s is PSIT       /* copy for the firee relationships     */

1> range of t is PVWT       /* copy for the firee relationships     */

1> retrieve (p.time,p.tpid,s.side,t.vehicle,p.fpid,p.result,q.side,
2>           r.vehicle,r.miles)
3>    where p.flpn = q. n   /* match on logical player # (firer) */
4>      and q.side = r.     /* match on force codes (firer)      */
5>      and q.ptype = r.  pe /* match on player type (firer)     */
6>      and p.miles = r.n..es /* match on weapon codes (firer)   */
7>      and p.flpn > 0        /* firers lpn is greater than zero*/
8>      and p.tlpn = s.lpn    /* match logical player # (firee) */
```

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```
 9>        and s.side = t.side      /* match on force codes (firee)   */
10>        and s.ptype = t.ptype    /* match player type codes (firee)*/
11>        and p.frat = "N"         /* omit fratricides               */
12>     sort by p.time              /* maintain chronological order   */
```

time	tpid	side	vehicle	fpid	result	side	vehicle	miles
30-Nov-89 08:06:59	C65	O	Tank (T-72)	C12	H	B	M60 A1/A3 Tank	12
30-Nov-89 08:16:01	C35	O	Tank (T-72)	D33	N	B	M60 A1/A3 Tank	12
30-Nov-89 08:21:32	C23	O	Tank (T-72)	D23	N	B	M60 A1/A3 Tank	12
30-Nov-89 08:21:58	C23	O	Tank (T-72)	D23	K	B	M60 A1/A3 Tank	12
30-Nov-89 08:22:03	12A	B	Bradley	C13	K	O	Tank (T-72)	10
30-Nov-89 08:34:01	327	O	BMP	C33	N	B	M60 A1/A3 Tank	12
30-Nov-89 08:34:26	762	O	BMP	C33	N	B	M60 A1/A3 Tank	12
30-Nov-89 08:56:47	A16	O	Tank (T-72)	C12	K	B	M60 A1/A3 Tank	12
30-Nov-89 08:57:58	C12	B	Abrams	A65	H	O	Tank (T-72)	10
30-Nov-89 08:57:58	C12	B	M60 A1/A3 Tank	A65	H	O	Tank (T-72)	10

(10 rows)
End of Request

    4.6 Now let us look at some other tables in our research
database. Indirect fire casualties are recorded in the IFCT, and
the firing unit is recorded in the Indirect Fire Missions Fired
table (the IFMF). This is analogous to the relationship between
the Pairing Event Table (PET) and the Firing Event Table (the FET).
Example six matches an indirect fire casualty with the firing
battery and its force code. Note that there are few [and sometimes
no] casualties reported by indirect fire.

Example Six: Matching Indirect Fire Casualties with Fire Mission.

QUEL COMMANDS:

```
1> /* Example # 6:  Matching Indirect Fire Casualties with fire   */
   /* mission.                                                      */
2> range of c is IFCT     /* Indirect Fire Casualty Table          */

1> range of m is IFMF     /* Indirect Fire Missions Fired          */

1> retrieve (c.time,c.side,c.pid,m.side,m.org)
2>    where c.fm = m.fm  /* match on fire mission numbers           */
3>     sort by c.time    /* keep events in order                    */
```

time	side	pid	side	org
30-Nov-89 09:03:25	O	314	B	4.2 inch

(1 row)
End of Request

10

4.7 Example seven adds to the previous example in that we also search the Indirect Fire Target Table (the IFTT) to locate any pre-planned target locations for the fire mission. We return the position of the target in the IFTT ('ifnum' is the sequence number of the target in the IFTT).

Example Seven: Check to see if Indirect Fire Casualty was a Preplanned Target.

QUEL COMMANDS_____

```
1> /* Example # 7:  Check to see if indirect fire casualty   */
2> /*                of a pre-planned fire mission.           */
3> /*     .                                                    */
4> range of c is IFCT     /* Indirect Fire Casualty Table     */

1> range of m is IFMF     /* Indirect Fire Missions Fired     */

1> range of t is IFTT     /* Indirect Fire Target Table       */

1> retrieve (c.time,c.side,c.pid,m.side,m.org,t.target)
2>    where c.fm = m.fm  /* match on fire mission number       */
3>       and m.target = t.target /* match on target name       */
```

```
+--------------------+------+------+------+--------------------+------+
|time                |side  |pid   |side  |org                 |target|
+--------------------+------+------+------+--------------------+------+
+--------------------+------+------+------+--------------------+------+
(0 rows)
End of Request
```

4.8 The last example shows an example of using some INGRES provided numerics function to compute the average engagement range, the number of engagements by weapon system, the minimum engagement range and the maximum engagement range for matched pairing events. Note the use of the "by" operator in the aggregate expression. Other numeric functions such as summation and trigometric functions are provided by INGRES and are described in Volume One of the INGRES manuals.

Example Eight: Computing summary statistics.

QUEL COMMANDS:_____

```
1> /* Example # 8:  Computing some summary statistics for the BLUE */
2> /*               and OPFOR forces.                              */
3> /*                                                               */
4> set aggregate noproject   /* eliminate rows with zero           */
1> range of q is PSIT        /* Player State Initialization Table  */
1> range of p is PET         /* Pairing Event Table                */
1> range of r is PVWT        /* Player Vwhicle Weapon Table        */
1> retrieve (r.miles,r.weapon,r.vehicle,r.ptype,
2>   avg_range = avg(p.distance by r.miles,r.ptype
3>                        where p.flpn > 0
```

```
 4>                             and p.flpn = q.lpn
 5>                             and q.side = r.side
 6>                             and q.ptype = r.ptype
 7>                             and p.miles = r.miles),
 8>   sample_sz = count(p.distance by r.miles,r.ptype
 9>                          where p.flpn > 0
10>                             and p.flpn = q.lpn
11>                             and q.side = r.side
12>                             and q.ptype = r.ptype
13>                             and p.miles = r.miles),
14>   min_range =    min(p.distance by r.miles,r.ptype
15>                          where p.flpn > 0
16>                             and p.flpn = q.lpn
17>                             and q.side = r.side
18>                             and q.ptype = r.ptype
19>                             and p.miles = r.miles),
20>   max_range =    max(p.distance by r.miles,r.ptype
21>                          where p.flpn > 0
22>                             and p.flpn = q.lpn
23>                             and q.side = r.side
24>                             and q.ptype = r.ptype
25>                             and p.miles = r.miles))
```

miles	weapon	vehicle	ptype	avg_range	sample_sz	min_ra	max_ra
3	Sagger	BMP	3	1353.333	3	1134	1573
10	125mm main gun	Tank (T-72)	1	1198.714	7	195	1768
12	105mm main gun	M60 A1/A3 Tank	1	1740.324	34	833	2973
14	PKT (73mm)	BMP	3	454.000	4	249	665
21	25mm	Bradley	29	1703.000	1	1703	1703

(5 rows)

End of Request

Now, suppose we wished to collect this same data across multiple
mission databases and perform summary statistics on them. We could
use either a statistical package or a spreadsheet program on a
microcomputer to help us get the data into a presentation form.
First, we would need to output the data from one mission database
into a file with a format acceptable to a statistical package or
spreadsheet program, and then combine these files into a single
file for input into our summary software. To do this, we use the
Report Writer function of INGRES.

USING REPORT WRITER TO CROSS MULTIPLE MISSION DATABASES

Note that the 'sort' option in removed from the query and placed
with the report. The output file is defined with the '.OUT'
statement and is called 'range.dat' in our example. The '.PRINT'
line defines our output format and includes special characters used
to delimit the fields of the records. Other delimiters may be used
based on the needs of your summary software. The last command,

'.NL' tells the report writer to end each record with a new line character.

   Two steps are needed to execute the above report. The first is to check the syntax of our report and install it in the necessary mission database:

   $ sreport *dbname* filename.rw

where *dbname* is one of the mission database names and filename.rw is the name given to the file containing our report writer commands. The next step is to run the report, and that is done by the following:

   $ report *dbname* range

where 'range' is the name given to the report on the '.NAME' line of the report definition. The output is a file named 'range.dat' in your current working directory. The file looks like this:

9003A0	,	4,MTC	,A,105mm main gun ,	815.00
9003A0	,	4,MTC	,A,105mm main gun ,	877.00
9003A0	,	4,MTC	,A,105mm main gun ,	948.00
9003A0	,	4,MTC	,A,105mm main gun ,	1510.00
9003A0	,	4,MTC	,A,105mm main gun ,	1513.00
9003A0	,	4,MTC	,A,105mm main gun ,	1513.00
9003A0	,	4,MTC	,A,105mm main gun ,	2143.00
9003A0	,	4,MTC	,A,125mm main gun ,	265.00
9003A0	,	4,MTC	,A,125mm main gun ,	1768.00

   For each mission database that we apply the report against, we will get a file named range.dat;n where ;n refers to the version number assigned by the VMS monitor. To copy all of these files into one, issue the following command at the monitor:

   $ copy range.dat;* allrange.dat

now, all of your data is in one file, allrange.dat, and it is ready to be used with SPSS (or another statistical package) or the spreadsheet of your choice on a microcomputer.

Appendix A – Mission Database Structure
(Revised January 1990)

This Appendix documents the format of the NTC Mission Database. These databases include all relevant data from both NTC digital data sources, the CIS log and the RDMS log.

The CIS (Core Instrumentation Subsystem) is located on the VAX 11/780s. It consists of events gathered in the field, summaries of those events, the current state of units and players and the current battlefield conditions. This is the central 'brain' of the NTC instrumentation software, and the data archived from this software is the primary source of the Research databases. The structure of the mission databases is a reflection of the internal memory layout of the CIS.

The RDMS (Range Data Measurement System) log is the raw events coming out of the field from the players' Micro-B units. This is the data stream that feeds the CIS. We use this data (when available and in a usable format) to augment the CIS data. In particular, we use the miles event codes from weapon systems to enhance the PET (Pairing Event Table) data.

Each Mission Database contains 18 INGRES tables:

(1) Mission Identification Table (MID),
(2) Player State Initialization Table (PSIT),
(3) Player State Update Table (PSUT),
(4) Unit State Initialization Table (USIT),
(5) Unit State Update Table (USUT),
(6) Unit Type Table (UTT),
(7) Player/ Vehicle/ Weapon Code Table (PVWT),
(8) Firing Event Table (FET),
(9) Pairing Event Table (PET),
(10) Communication Table (CT),
(11) Ground Player Position Location Table (GPLT),
(12) Air Player Position Location Table (APLT),
(13) IFCAS Target Table(IFTT),
(14) IFCAS Target Group Table (IFGT),
(15) IFCAS Missions Fired Table (IFMF),
(16) IFCAS Casualties Table (IFCT),
(17) Minefield Casualties Table (MCT),
(18) Control Measure Table (CM)

The table types and their compositions were chosen to allow for the inclusion of the maximum amount of information in a format that will facilitate access for the kinds of research issues that have been defined to date. The table descriptions have been purposely kept as simple as possible to allow review of the structure and content without overwhelming the reviewer with reams of documentation. More complete element definitions are available in the Programmers' Guide to NTC Data, which provides a comprehensive guide to NTC digital data.

A rotation at the NTC is a three week period of time when a task force (Armored and Mechanized units) trains at Ft. Irwin, California. The rotation is divided into at least 2 histories, one each for the Armored unit and the Mechanized unit. Each History can have up to forty-eight segments in it, where a segment is a period of time when a specific mission is being conducted. These segments are After Action Reviews (AARs), battles such as Deliberate Attacks, Defend in Sector, Defend Battle Position and Movement to Contact, etc. Each Mission-level segment is a candidate for a unique research database.

A separate database is generated for each mission segment. The database name is an eight-character code constructed as follows:

Character 1 - For the mission databases derived from the National Training Center at Ft. Irwin, Ca, 'N'. For mission databases derived from data from the Joint Readiness Training Center at Ft. Chaffee, Ark. 'J'.

Characters 2,3 - Year of the Rotation.

Character 4 - A single hexidecimal digit representing the Rotation number. It ranges from 1 to E (for the fourteen rotations usually scheduled in a fisical year period)

Characters 5,6 - One of the following codes representing the type of task force:

A_	Armor 1
R_	Armor 2
M_	Mech Inf 1
E_	Mech Inf 2
I_	Infantry 1
N_	Infantry 2
C_	Cavalry 1
V_	Cavalry 2
T_	Air Assault
L_	Light / Ranger
S_	Special Forces
AM	Armor / Mech
IM	Infantry / Mech
AC	Armor / Cavalry
ZA	More than 2 TF's
_A	Armor 1
_R	Armor 2
_M	Mech Inf 1
_E	Mech Inf 2
_I	Infantry 1
_N	Infantry 2
_C	Cavalry 1
_V	Cavalry 2
_T	Air Assault
_L	Light / Ranger
_S	Special Force

Characters 7,8 - Day of the month of the exercise began on.

A.2 Description of NTC Mission Database Tables

This section describes the contents of each table in the Mission
Database. It includes the explicit layout, element by element, for
each of the 18 tables.

A.2.1 Mission Identification Table (MID)

The Mission ID table provides all information required to
completely identify and categorize a mission segment.

Element Name	Element Description	Units
START_TIME	Mission start date and time	20 Char
END_TIME	Mission end date and time	20 Char
HISTORY	History Name	10 Char
SEGMENT	Segment Number	1 Integer
MTYPE[1]	Mission Type	20 Char
MSUBTYPE[2]	Mission sub type	10 Char
ORG	Unit ID	20 Char
TF	Task force type	1 Char
AIRPL	Air player P/L logging rate	2 Integer
GNDPL	Ground player P/L logging rate	2 Integer
DBNAME	Database name	10 Char

```
1> print mid

mid table

----------------------+------------------+-------+---+------------+----------+-----------+---+---+---+---------+
|start_time            |end_time          |history|seg|mtype       |msubtype  |org         |tf |air|gnd|dbname  |
+---------------------+------------------+-------+---+------------+----------+-----------+---+---+---+---------+
|03-Dec-89 06:50:00|03-Dec-89 07:30:00|9003A0 | 15|Hasty Attack|Movement |1-008 X 1-032 |C_ |300|300|N903C_03|
|03-Dec-89 07:30:01|03-Dec-89 09:10:00|9003A0 | 15|Hasty Attack|Objective|1-008 X 1-032 |C_ |300|300|N903C_03|
+---------------------+------------------+-------+---+------------+----------+-----------+---+---+---+---------+
```

A.2.2 Player State Initialization Table (PSIT)

This table describes the player list at the beginning of the
mission segment. It includes all players, Opfor, Bluefor, and
White.

---

[1] The Mission Type will be Counterattack, Defend, Delay,
Deliberate Attack, Hasty Attack, Hasty Defend, Movement to Contact,
Night Attack, Night Defend, Raid, Search and Attack and Security.

[2] Sub mission types are: Recon, Ctr-Recon, Mvmt/Mnvr,
Objective, Maneuver, Movement and MainBattle

Element Name	Element Description	Units
PID	Player identification (Bumper number)	3 Char
LPN[3]	Logical Player Number	2 Integer
SIDE	B(lue), O(pfor), or W(hite)	1 Char
INST	I(nstrumented) or N(ot instrumented)	1 Char
ACTIVE	0 - undetermined, 1 - Active, 2 - Not active	1 Integer
PTYPE	Player Type Code (See PVWT Table)	1 Integer
ORG	Next higher Line Unit	20 Char
TRACK	T(racked) or U(ntracked) by RDMS	1 Char
PSTAT[4]	Player Status Code	1 Integer

>range of p is psit
>retrieve (p.all) where p.side != "W" /* don't look at controllers */

pid	lpn	side	inst	active	ptype	org	track	pstat
HQ1	32	O	I	0	3	TOC	T	1
HQ2	33	O	I	0	1	TOC	T	1
HQ3	34	O	I	0	3	TOC	T	1
HQ5	35	O	I	0	3	TOC	U	1
HQ6	36	O	I	0	3	TOC	U	1

A.2.3 Player State Update Table (PSUT)

The Player State Update table tracks changes to all players throughout the duration of the mission segment. Fields that are subject to update are SIDE, INST, PTYPE, ORG, TRACK and PSTAT.

Element Name	Element Description	Units
TIME	Date and Time of Update	20 Char
PID	Player identification (Bumper number)	3 Char
LPN	Logical Player Number	2 Integer
SIDE	B(lue), O(pfor), or W(hite)	1 Char
INST	I(nstrumented) or N(ot instrumented)	1 Char
PTYPE	Vehicle Type Code (See PVWT Table)	1 Integer
ORG	Next higher Line Unit	20 Char
TRACK	T(racked) or U(ntracked) by RDMS	1 Char
PSTAT[3]	Player Status Code	1 Integer

---

[3] The Logical Player Number (LPN) is a unique index used by the realtime system.

[4] The player status codes are :

1 : Operational		2 : Combat Loss	
3 : OC Gun Kill		4 : Accidental Kill	
5 : Administrative Kill		6 : Mechanically Down	
7 : Mobility Kill			

```
>range of p is psut
>retrieve (p.all)
```

time	pid	lpn	side	inst	ptype	org	track	pstat
05 Feb 88 03:11:25	DMT	356	B	I	2	CP/D/D/2-005	T	1
05 Feb 88 03:11:27	DEV	303	B	I	2	CBT/2-005	U	5
05 Feb 88 03:12:27	21H	4	W	I	2	No unit	U	9
05 Feb 88 03:12:41	433	128	O	I	3	3/3-001	T	2
05 Feb 88 03:13:40	21S	13	W	I	2	No unit	T	9
05 Feb 88 03:13:42	117	44	O	I	3	1/1-001	T	2
05 Feb 88 03:14:49	216	67	O	I	3	1/2-001	T	1

A.2.4 Unit State Initialization Table (USIT)

The Unit State table describes Opfor and Bluefor units at the beginning of the mission segment.

Element Name	Element Description	Units
UNIT	Unit Name	15 Char
LINU	Next Higher Line Unit	15 Char
STAU	Next Higher Statistical Unit	15 Char
UTYPE	Unit Type Code (See Section A.3)	1 Integer
SIDE	Force Code (O or B)	1 Char
ECHELON[5]	Echelon	3 Char

```
>range of u is usit
>retrieve (u.all)
```

unit	linu	stau	utype	side	echelo
001	No unit	No unit	5	O	Reg
1-001	001	001	1	O	Bn
1/1-001	1-001	1-001	1	O	Co
2/1-001	1-001	1-001	2	O	Co
3/1-001	1-001	1-001	3	O	Co
2-001	001	001	2	O	Bn
1/2-001	2-001	2-001	1	O	Co
2/2-001	2-001	2-001	2	O	Co
3/2-001	2-001	2-001	3	O	Co
3-001	001	001	3	O	Bn
1/3-001	3-001	3-001	1	O	Co

A.2.5 Unit Type Table (UTT)

The Unit Type table contains information relating to unit organizations.

---

[5] Echelon will be Plt, Co, Bn, Bde/ Div, or Reg

Element Name	Element Description	Units
UTYPE[6]	Unit Type Code	1 Integer
SIDE	Unit Force (O or B)	1 Char
ECHELON[4]	Echelon	3 Char
DESC	Unit Description	20 Char

```
>range of u is utt
>retrieve (u.all)
```

utype	side	echelo	desc
1	O	Plt	1st Platoon
2	O	Plt	2nd Platoon
3	O	Plt	3rd Platoon
4	O	Plt	4th Platoon
5	O	Plt	Anti-Tank
6	O	Plt	Engineer
7	O	Plt	Chemical
8	O	Plt	Armored Cavalry
9	O	Plt	ABN Infantry
10	O	Plt	Army Aviation
11	O	Plt	Air Cavalry

A.2.6 Unit State Update Table (USUT)

The Unit State Update table tracks changes to all units throughout the duration of the mission segment. Changes to a unit are infrequent, so this table usually has no entries in it.

Element Name	Element Description	Units
TIME	Date and Time of Update	20 Char
UNIT	Unit Name 20 Char	
STAU	Next Higher Statistical Unit	20 Char
UTYPE[5]	Unit Type Code 1 Integer	

```
>range of u is usut
>retrieve (u.all)
```

time	unit	stau	utype

End of Request - 0 Row

A.2.7 Player/ Vehicle/ Weapon Code Table (PVWT)

---

[6] A list of unit types is presented in section A.3.

The Weapon Code table defines a unique code for each weapon present on the battlefield. The codes allow correlation of MILES codes, vehicle types, and weapons. The PVWT is <u>static</u>; it doesn't change from database to database. A listing of the PVWT table is included as Section A.2.7.1.

Element Name	Element Description	Units
SIDE	Side Code O(pfor) or B(luefor)	1 Char
PTYPE	Player Type Code	1 Integer
VEHICLE	Vehicle Description	15 Char
MILES	MILES Weapon Code	1 Integer
WEAPON	Weapon description	15 Char
IAMMO	Initial Ammunition Load (not used)	2 Integer

A.2.7.1 PVWT Table Listing

```
1> print pvwt
```

side	ptype	vehicle	miles	weapon	iammo
B	0	Undefined	0	Unknown	0
B	1	M60 A1/A3 Tank	12	105mm main gun	0
B	1	Abrams	16	120mm main gun	0
B	1	M60 A1/A3 Tank	27	Coax	0
B	1	M60 A1/A3 Tank	28	105mm (miss)	0
B	1	M60 A1/A3 Tank	29	Coax (miss)	0
B	2	APC	24	M2 Machine Gun	0
B	2	APC	29	M2 (miss)	0
B	3	APC	7	TOW	0
B	3	APC	31	TOW (miss)	0
B	4	Manpack	0	non weapon	0
B	5	Manpack	15	Viper	0
B	5	Manpack	28	Viper (miss)	0
B	6	Manpack	8	Dragon	0
B	7	Manpack	27	M-16 rifle	0
B	7	Manpack	29	M-16 (miss)	0
B	8	Manpack	27	M60 machine gun	0
B	8	Manpack	29	M60 (miss)	0
B	9	Manpad	26	Stinger	0
B	10	Vulcan	23	20mm	0
B	10	Vulcan	29	20mm (miss)	0
B	11	Radar (GSR)	0	non weapon	0
B	12	Jammer	0	non weapon	0
B	13	Collector	0	non weapon	0
B	14	Truck	0	non weapon	0
B	15	DIVAD (M730)	25	Chaparral	0
B	15	DIVAD (M730)	28	Chaparral (miss)	0
B	16	Mortar	4	4.2 inch	0
B	17	Mortar	4	81mm	0
B	18	SP Gun	0	175mm	0
B	19	SP Howitzer	18	8 inch	0
B	20	SP Howitzer	18	105mm	0

B		21	SP Howitzer	18	155mm		0
B		22	AH 1S (Heli.)	7	TOW		0
B		22	AH 1S (Heli.)	14	2.75" Rockets		0
B		22	AH 1S (Heli.)	23	20mm		0
B		22	AH 1S (Heli.)	29	2.75"/20mm miss		0
B		23	Fighter	23	30mm		0
B		23	Fighter	29	30mm (miss)		0
B		24	Bomber	20	Rockeye (CB)		0
B		25	Fighter/Bomber	0	Uninstrumented		0
B		26	Reconnaissance	0	non weapon		0
B		29	Bradley	7	TOW		0
B		29	Bradley	21	25mm		0
O		0	Undefined	0	Unknown		0
O		1	Tank (T-72)	10	125mm main gun		0
O		1	Tank (T-72)	27	M60 Machine gun		0
O		1	Tank (T-72)	28	125mm (miss)		0
O		1	Tank (T-72)	29	M60 (miss)		0
O		2	BMP	0	non weapon		0
O		3	BMP	3	Sagger		0
O		3	BMP	14	PKT (73mm)		0
O		3	BMP	28	PKT (73mm)		0
O		4	BMP	3	Sagger		0
O		5	BRDM	0	non weapon		0
O		6	BRDM	8	Sagger		0
O		7	ZSU-23-4	6	Radar Mode		0
O		7	ZSU-23-4	22	Visual Mode		0
O		7	ZSU-23-4	29	Weapon miss		0
O		8	SP Howitzer	18	122mm		0
O		8	SP Howitzer	28	122mm		0
O		9	Gun Howitzer	13	152mm		0
O		9	Gun Howitzer	28	152mm (miss)		0
O		10	Howitzer	13	152mm		0
O		10	Howitzer	28	152mm (miss)		0
O		11	Manpack	0	non weapon		0
O		12	Manpack	3	Sagger		0
O		13	Manpack	27	AK (M-16)		0
O		13	Manpack	29	AK (M-16) miss		0
O		14	Manpack	27	PKT (M-60)		0
O		14	Manpack	29	PKT (M-60)		0
O		15	Manpack	26	SA7		0
O		16	Jammer	0	non weapon		0
O		17	Collector	0	non weapon		0
O		18	Truck	0	non weapon		0
O		19	ADA	0	Uninstrumented		0
O		20	SA9	0	Uninstrumented		0
O		21	Mortar	16	120mm		0
O		22	Mortar	0	180mm		0
O		23	HIND-D	7	AT-6		0
O		23	HIND-D	14	57mm Rocket		0
O		23	HIND-D	23	30mm		0
O		24	Fighter	0	Uninstrumented		0
O		25	Bomber	0	Uninstrumented		0
O		26	Fighter/Bomber	0	Uninstrumented		0
O		27	Reconnaissance	0	non weapon		0
W		0	Video	0	non weapon		0

```
|W        |       1|Controller      |      0|Controller gun  |      0|
|W        |       2|Firer Marker    |      0|non weapon      |      0|
+---------+--------+----------------+-------+----------------+-------+
```

A.2.8 Firing Event Table (FET)

This table will maintain a time-ordered record of all legitimate firings recorded by the RDMS. The last column, ammo, is only updated when RDMS data is utilized to enhance the data, and is otherwise zero.

Element Name	Element Description	Units
TIME	Date and Time of Fire Event	20 Char
PID	Player ID (Bumper Number)	3 Char
LPN	Logical Player Number	2 Integer
MILES	MILES Weapon Code (See PVWT)	1 Integer
X	Position location X coordinate	4 integer
Y	Position location Y coordinate	4 integer
IAMMO	Ammunition Remaining	4 Integer

```
  1> print fet

fet table
```

time	pid	lpn	miles	x	y	ammo
30-Nov-89 07:33:32	C66	180	27	22075	123888	0
30-Nov-89 07:34:09	SC1	310	21	35538	118138	0
30-Nov-89 07:34:17	SC1	310	21	35538	118138	0
30-Nov-89 07:34:23	SC1	310	21	35538	118138	0
30-Nov-89 07:34:25	SC1	310	21	35538	118138	0
30-Nov-89 07:34:53	23B	363	21	36650	115175	0
30-Nov-89 07:36:27	23B	363	21	36650	115175	0
30-Nov-89 07:36:29	23B	363	21	36650	115175	0
30-Nov-89 07:38:07	23B	363	21	34525	117613	0
30-Nov-89 07:38:09	23B	363	21	34525	117613	0
30-Nov-89 07:38:19	SC6	315	21	28838	116350	0
30-Nov-89 07:38:59	23B	363	21	34525	117613	0
30-Nov-89 07:39:13	SC6	315	21	28838	116350	0

A.2.9 Pairing Event Table (PET)

The Pairing table will maintain a time-ordered record of legitimate pairing events. This table will also contain information relating to the firer if the pairing event can be matched with a fire event.

Element Name	Element Description	Units
TIME	Date and Time of Pairing	20 Char

TPID	Target ID (Bumper Number)	3	Char
TLPN	Target LPN	2	Integer
RESULT	N(ear miss), H(it), K(ill)	1	Char
FPID	Firer ID (Bumper Number)	3	Char
FLPN	Firer LPN	2	Integer
MILES	Firer Weapon Type (MILES - See PVWT)	1	Integer
FRAT	Fratricide Indicator (Y/N)	1	Char
TX	Target position location X coordinate	4	Integer
TY	Target position location Y coordinate	4	Integer
FX	Firer position location X coordinate	4	Integer
FY	Firer position location Y coordinate	4	Integer

```
1> print pet
```

pet table

time	tpid	tlpn	result	fpid	flpn	miles	frat	tx	ty	fx	fy	dist
30-Nov-89 07:43:45	60A	339	H		0	0	N	32238	114550	0	0	0
30-Nov-89 07:43:53	B34	368	H		0	0	N	32400	118038	0	0	0
30-Nov-89 07:44:18	B34	368	N		0	0	N	32138	118138	0	0	0
30-Nov-89 07:44:30	D24	394	N		0	0	N	28450	116638	0	0	0
30-Nov-89 07:46:45	A16	98	N		0	0	N	21863	124638	0	0	0
30-Nov-89 07:47:45	A65	85	H		0	0	N	21750	124638	0	0	0
30-Nov-89 07:52:15	23B	363	K	B34	368	12	Y	29213	119988	31150	118463	2465
30-Nov-89 07:54:34	B60	354	K		0	0	N	29350	120725	0	0	0
30-Nov-89 07:55:59	330	215	N		0	0	N	22450	124188	0	0	0
30-Nov-89 07:56:32	313	185	H		0	0	N	22863	124225	0	0	0
30-Nov-89 07:57:12	33A	352	K		0	0	N	29900	115650	0	0	0
30-Nov-89 07:57:26	B11	357	N		0	0	N	29275	121950	0	0	0
30-Nov-89 07:57:30	C13	374	H		0	0	N	36325	115538	0	0	0

A.2.10 Communication Table (CT)

This table will maintain a record of all commo events (Key
Depressed/ Released) for the mission segment.

Element Name	Element Description	Units
TIME	Date and Time of Commo Event	20 Char
PID	Player ID (Bumper Number)	3 Char
LPN	LPN	2 Integer
NET	Radio Net (1 or 2)	1 Char
Duration	Duration of transmission in MM:SS	5 Char

```
1> print ct
```

ct table

time	pid	lpn	net	durati
30-Nov-89 08:04:06	FD2	268	1	02:22
30-Nov-89 09:45:37	B60	354	2	49:38

```
| 30-Nov-89 09:53:41 |SC6    |    315|2       |27:53 |
+--------------------+------+------+------+------+
```

(3 rows)
End of Request

A.2.11 Ground Player Position Location Table (GPLT)

This table will maintain a time-ordered record of Position location (PL) X and Y coordinates for each instrumented ground player. PL will be recorded at an operator-selected interval.

Element Name	Element Description	Units
TIME	Date and Time of PL	20 Char
PID	Player ID (Bumper Number)	3 Char
LPN	LPN	2 Integer
X	Position location X coordinate	4 Integer
Y	Position location Y coordinate	4 Integer

    1> print gplt

gplt table

```
+--------------------+------+------+------------+------------+
|time                |pid   |lpn   |x           |y           |
+--------------------+------+------+------------+------------+
| 30-Nov-89 07:37:14 |21B   |    1|       35413|      117700|
| 30-Nov-89 07:37:14 |21E   |    2|       32463|      114450|
| 30-Nov-89 07:37:14 |21G   |    4|       32738|      112813|
| 30-Nov-89 07:37:14 |21H   |    5|       37975|      111825|
| 30-Nov-89 07:37:14 |21J   |    7|       28638|      102413|
| 30-Nov-89 07:37:14 |21L   |    9|       35363|      111375|
| 30-Nov-89 07:37:14 |21M   |   10|       37900|      114050|
| 30-Nov-89 07:37:14 |21N   |   11|       34163|      113900|
| 30-Nov-89 07:37:14 |21P   |   12|       36463|      108088|
| 30-Nov-89 07:37:14 |21Q   |   13|       33438|      117475|
| 30-Nov-89 07:37:14 |21S   |   15|       33813|      120500|
| 30-Nov-89 07:37:14 |21U   |   17|       39488|      118725|
| 30-Nov-89 07:37:14 |21W   |   19|       35250|      116338|
------------------------------------------------------------
```

A.2.12 Air Player Position location Table (APLT)

This table will maintain a time-ordered record of Position location (PL) X Y, and Z coordinates for each instrumented air player. PL will be recorded at operator-selected intervals.

Element Name	Element Description	Units
TIME	Date and Time of PL	20 Char
PID	Player ID (Bumper Number)	3 Char
LPN	LPN	2 Integer

```
X                  Position location X coordinate          4 Integer
Y                  Position location Y coordinate          4 Integer
Z                  Position location Y coordinate          4 Integer
```

```
1> print aplt
```

aplt table

```
+--------------------+-----+------+------------+------------+------------+
|time                |pid  |lpn   |x           |y           |z           |
+--------------------+-----+------+------------+------------+------------+
| 30-Nov-89 07:37:14 |RA2  |   23|      33150|     117388|       1662|
| 30-Nov-89 07:37:14 |OH1  |  275|      26713|      99863|          0|
| 30-Nov-89 07:37:14 |AH1  |  279|      21225|      96625|       1537|
| 30-Nov-89 07:37:14 |AH2  |  280|      41575|     108800|        750|
| 30-Nov-89 07:37:14 |OV1  |  281|      41550|     108888|        400|
| 30-Nov-89 07:37:14 |OV2  |  282|      21225|      96563|          0|
| 30-Nov-89 07:37:14 |AV1  |  284|      58238|     115388|        737|
| 30-Nov-89 07:42:14 |OH1  |  275|      26713|      99863|          0|
| 30-Nov-89 07:42:14 |AH1  |  279|      21050|      96800|        700|
| 30-Nov-89 07:42:14 |AH2  |  280|      38925|     109838|       1050|
| 30-Nov-89 07:42:14 |OV1  |  281|      35625|     108525|        550|
| 30-Nov-89 07:42:14 |OV2  |  282|      21225|      96563|          0|
| 30-Nov-89 07:42:14 |AV1  |  284|      58225|     115388|        700|
```

A.2.13 Indirect Fire Casualty Assessment (IFCAS) Target Table (IFTT)

This table will contain a list of pre-planned indirect fire (IFCAS) targets and their locations.

```
Element        Element
Name           Description                                    Units
----------     ------------------------------------------     -------
TARGET         IFCAS Target Name                              5 Char
SIDE           Side (0 or B)                                  1 Char
TGT_IDX        Target Index                                   2 Integer
X              Position location X coordinate                 4 Integer
Y              Position location Y coordinate                 4 Integer
```

```
>range of i is iftt
>retrieve (i.all)
```

```
|target|side   |tgt_id|x       |y       |
|------------------------------------------|
| 055  |B      |    1 |52800  | 98300  |
| 056  |B      |    2 |53300  | 97800  |
| 057  |B      |    3 |45100  |106800  |
| 058  |B      |    4 |44800  |107000  |
|      |B      |    5 |46200  | 98700  |
|      |B      |    6 |50100  | 99900  |
| 2    |B      |    7 |46400  | 98400  |
|      |B      |    8 |54400  |104400  |
| 3    |B      |    9 |54400  |100400  |
```

	B	10	55300	100800
4	B	11	55300	100800
118	B	12	54800	120000

A.2.14 IFCAS Target Group Table (IFGT)

This table will contain a list of pre-planned IFCAS target groups and their component targets.

Element Name	Element Description	Units
GROUP	IFCAS Target Group Name	3 Char
SIDE	Side (O or B)	1 Char
TARGET1	IFCAS Target Name #1	2 Integer
TARGET2	IFCAS Target Name #2	2 Integer
TARGET3	IFCAS Target Name #3	2 Integer

o
o
o

(Up to 10 Targets)

```
1> print ifgt
```

ifgt table

group	side	target	target	target	target	target	target	target	target	target	target
Y1A	O	10	11	0	0	0	0	0	0	0	0
Y1B	O	12	13	0	0	0	0	0	0	0	0
Y1C	O	14	15	0	0	0	0	0	0	0	0
Y1D	O	16	17	0	0	0	0	0	0	0	0
Y1E	O	18	19	0	0	0	0	0	0	0	0
Y1F	O	20	21	0	0	0	0	0	0	0	0
F6W	O	22	23	0	0	0	0	0	0	0	0
F6Z	O	24	25	0	0	0	0	0	0	0	0
F8	O	26	27	28	0	0	0	0	0	0	0
F8A	O	29	30	31	0	0	0	0	0	0	0
HT	O	32	33	34	0	0	0	0	0	0	0
Y2	O	35	36	37	0	0	0	0	0	0	0
Y2W	O	38	39	0	0	0	0	0	0	0	0

A.2.15 IFCAS Missions Fired Table (IFMF)

This table contains a list of all IFCAS missions fired during this mission segment. The elements present in this table are determined by how the data are specified. For instance, an IFCAS mission can be specified either by using a preplanned mission number or a service request. If a service request is specified, the target location can be given either by using a target group name or target coordinates.

A-13

Element Name	Element Description	Units
TIME	Date and Time of IFCAS mission	20 Char
FM	IFCAS Preplanned Mission Number	5 Char
SIDE	Force Code (O or B)	1 Char
ORG	Battery Identifiy	20 Char
TARGET	IFCAS Target Group Name	5 Char
X	IFCAS Target X coordinate	4 Integer
Y	IFCAS Target Y coordinate	4 Integer
MILES	IFCAS Weapon type code	1 Integer
SHELL	Shell Type Code	2 Char
FUSE	Fuse Type Code	2 Char

```
1> print ifmf
```

ifmf table

time	fm	side	org	target	x	y	miles	shell	fuse
30-Nov-89 07:38:18	13	B	DA1	D1		36500	80000	18	DP	VT
30-Nov-89 07:54:00	14	O	OA4 122MM SP	SMK1		32100	80000	18	HC	PD
30-Nov-89 07:58:00	15	O	OA4 122MM SP	SMK2		32500	80000	18	HC	VT
30-Nov-89 08:02:00	16	O	OA4 122MM SP	SMK3		33100	80000	18	HC	VT
30-Nov-89 08:06:00	17	O	OA4 122MM SP	SMK4		31000	80000	18	HC	VT
30-Nov-89 08:11:35	20	O	OA4 122MM SP	1		29300	80000	18	HE	PD
30-Nov-89 08:16:14	23	O	OA5 122MM SP	SMK6		32100	80000	18	HC	VT
30-Nov-89 08:17:00	21	O	OA2 152MM SP	9F4		29400	80000	13	FA	VT
30-Nov-89 08:20:55	25	O	OA4 122MM SP	2		29400	80000	18	HE	PD
30-Nov-89 08:25:14	28	O	OA4 122MM SP	3		29400	80000	18	HE	PD
30-Nov-89 08:30:00	29	O	OA2 152MM SP	9F7		32900	80000	13	FA	VT
30-Nov-89 08:32:13	31	B	DB1	2		36700	80000	18	DP	VT
30-Nov-89 08:43:09	33	B	DA1	3		29400	80000	18	DP	VT

A.2.16 IFCAS Casualties Table (IFCT)

This table contains a list of all casualties assessed as a result of IFCAS missions fired during this mission segment.

Element Name	Element Description	Units
TIME	Date and Time of IFCAS mission	20 Char
FM	IFCAS Mission ID	5 Char
SIDE	Force Code (O or B)	1 Char
PID	ID of player killed by IFCAS	3 Char
LPN	LPN of player killed by IFCAS	2 Integer
X	Target position location X coordinate	4 Integer
Y	Target position location Y coordinate	4 Integer

```
1> print ifct
```

ifct table

```
+----------------------+------+------+------+------+------------+------------+
|time                  |fm    |side  |pid   |lpn   |x           |y           |
+----------------------+------+------+------+------+------------+------------+
| 30-Nov-89 09:03:25 | 46 |0    |314   |   186|      34750|      117863|
+----------------------+------+------+------+------+------------+------------+
```

(1 row)
End of Request

A.2.17 Minefield Casualties Table (MCT)

This table contains a list of all casualties assessed as a
result of minefields during this mission segment.

Element Name	Element Description	Units
TIME	Date and Time of minefield casualty	20 Char
PID	ID of player killed by minefield	3 Char
LPN	LPN of player killed by minefield	2 Integer
X	Target position location X coordinate	4 Integer
Y	Target position location Y coordinate	4 Integer

```
>range of m is mct
>retrieve (m.all)
```

```
|time                  |pid   |lpn   |x     |y     |
|--------------------------------------------------|
|--------------------------------------------------|
```

End of Request - 0 Row

A.2.18 Control Measure Table (CM)

The Control Measure Table contains a list of all initial
control measures and control measures added or deleted during the
mission segment.

```
Element          Element
Name             Description                              Units
----------       -----------------------------------      -------
TIME             Date and Time Control Measure Added      20 Char
CM_IDX           index of control measure (1 - 200)        2 Integer
SIDE             (B)lue, (O)pfor, (W)hite                  1 Char
STATE            (I)nitial, (A)dd or (D)elete              1 Char
STATUS           (C)urrent or (P)roposed                   1 Char
OPSYS[7]         Operating System Code:                    3 Char
ECHELON          Echelon code :                            3 Char
CMTYPE[8]        Control Measure Type                      1 Char
PURPOSE          Purpose  (See A.4)                       10 Char
POINTS           Number of points used                     1 Integer
X1               X coordinate, point 1                     4 Integer
Y1               Y coordinate, point 1                     4 Integer
X2               X coordinate, point 2                     4 Integer
Y2               Y coordinate, point 2                     4 Integer
X3               X coordinate, point 3                     4 Integer
Y3               Y coordinate, point 3                     4 Integer
                           o
                           o
                           o
          (Up to 12 Points)
```

1> print cm

cm table

time	cm_idx	side	state	status	opsys	ech	cmtyp	purpose	point	x1	y1	x12	y12
30-Nov-89 07:32:14	2	B	I	C		Bde	L	basic line	11	62750	112000	80000	70000
30-Nov-89 07:32:14	3	B	I	P	M/C	Bde	L	basic line	10	36550	119825	80000	70000
30-Nov-89 07:32:14	4	B	I	P	M/C	Bde	A	basic area	4	32475	122250	80000	70000
30-Nov-89 07:32:14	5	B	I	C	M/C	Bde	A	basic area	6	25850	122125	80000	70000
30-Nov-89 07:32:14	6	B	I	P	M/C	Bde	A	basic area	9	27300	124000	80000	70000
30-Nov-89 07:32:14	7	B	I	C	M/C	Bde	A	basic area	11	55850	119775	80000	70000
30-Nov-89 07:32:14	8	B	I	C	M/C	Bde	L	basic area	5	48775	112500	80000	70000
30-Nov-89 07:32:14	9	B	I	C	M/C	Bde	L	phase line	6	30000	127000	80000	70000
30-Nov-89 07:32:14	10	B	I	C	M/C	Bde	L	phase line	9	9825	128175	80000	70000
30-Nov-89 07:32:14	11	B	I	C	M/C	Bde	L	phase line	8	41750	122000	80000	70000
30-Nov-89 07:32:14	12	B	I	P	M/C	Bde	L	basic line	12	31425	116700	31250	114850
30-Nov-89 07:32:14	13	B	I	P	M/C	Bde	A	basic area	4	29750	116620	80000	70000

---

[7]Mnv - Manuever; FS - Fire Support; CSS - Combat Service Support; Int - Intelligence; ADA - Air Defense; M/C - Mobility/Counter mobility; n/c Not Specified;

[8]Point (P), Line (L) or Area (A).

A.3 Unit Type Descriptions

RED UNIT TYPES

Code	Platoon	Company	Battalion	Regiment
0	1st	1st	1st	TOC
1	2nd	2nd	2nd	AT
2	3rd	3rd	3rd	Artillery
3	4th	4th	TOC	Trans
4	AT	1st Hq	AT	MRR 1
5	Engineers	2nd Hq	Artillery	MRR2
6	Chemical	3rd Hq	Engineers	–
7	Armored Cav	4th Hq	Chemical	–
8	ABN Infantry	Recon	Armored Cav	–
9	Army Aviation	AT	ABN Infantry	–
10	Air Cav	Artillery	Army Aviation	–
11	Commo	Engineers	Air Cav	–
12	TNSP	Chemical	Commo	–
13	Medical	Armored Cav	TNSP	–
14	EW	S&S	Army Aviation	–
15	S&S	Army Aviation	EW	–
16	ADA	Air Cav	S&S	–
17	–	Commo	ADA	–
18	–	TNSP	–	–
19	–	Medical	–	–
20	–	EW	–	–
21	–	S&S	–	–
22	–	ADA Battery	–	–

BLUE UNIT TYPES

Code	Platoon	Company	Battalion	Div/ Bde
0	1st	A Co	1st	TOC
1	2nd	B Co	2nd	TRNS
2	3rd	C Co	3rd	–
3	4th	D Co	4th	–
4	AT	CP Co A	5th	–
5	Mortar	CP Co B	6th	–
6	FIST	CP Co C	7th	–
7	Scout	CP Co D	TOC	–
8	4.2	Artillery	Combat Trans	–
9	Manpad	Engineers	Field Trans	–
10	Engineers	Chemical	Artillery	–
11	Chemical	Armored Cav	Engineers	–
12	Armored Cav	ABN Infantry	Chemical	–
13	ABN Infantry	Army Aviation	Armored Cav	–
14	Army Aviation	Air Cav	ABN Infantry	–
15	Air Cavalry	Commo	Army Aviation	–
16	Commo	TNSP	Air Cavalry	–
17	TNSP	Medical	Commo	–
18	Medical	EW	TNSP	–
19	EW	S&S	Medical	–
20	S&S	DIVAD	EW	–
21	DIVAD	–	S&S	–
22	–	–	DIVAD	–

A.4 Control measure purpose descriptions.

```
check pt   - check point
coordinat  - coordination point
start pt   - start point
release pt - release point
passage pt - passage point (minefield)
depart pt  - departure point
remote sen - remote sensor
p-p target - pre-planned target point
basic line - basic line (used to draw numerous figures)
axis of ad - axis of advance
phase line - phase line
tank ditch - tank ditch
concertina - concertina wire
dir atk rt - direct attack route
boundary   - sector boundary
trace FEBA - trace Forward Edge of the Battle Area
FEBA       - Forward Edge of the Battle Area
limit adv  - Limit of advance
departure  - departure line
LD / LC    - Line of Departure / Line of Contact
prob deply - Probable line of deployment
FSCL       - Fire Support Coordination Line
RFL        - Restrictive Fire Line
CFL        - Coordinated fire line
MSR        - Main Supply Route
basic area - basic area (used for multiple shapes)
operation  - area of operations
assembly   - assembly area
attack pos - attack position area
drop zone  - drop zone area
fire suppt - fire support area
landing zn - landing zone area
FARP       - Foreward Area Re-arm/Refuel point
objective  - objective area
patrolbase - patrol base area
pickup zn  - pickup zone area
scat mnfld - scatterable minefield
support    - support area
group tgt  - group target area
RFA        - Registered Fire Area
non fire   - non fire area
contaminat - contaminated area
battle pos - battle position area
minefield  - minefield area
gap/bridge - gap / bridge area
rad marker - radiation marker area
passage    - minefield passage area
```

Querys accompanying the User's Guide are provided on disk in each user area.

User Guide Example	Disk File Name
Example 4.1	Example.1
Example 4.2	Example.2
Example 4.3	Example.3
Example 4.4	Example.4
Example 4.5	Example.5
Example 4.6	Example.6
Example 4.7	Example.7
Example 4.8	Example.8
	Example.8b (report writer)

Loading a query from disk:

1) press menu key,	[PF1]
2) select file option,	f [CR]
3) select the read option,	r [CR]
4) enter the filename:	example.1 [CR]
5) execute the query,	c [CR]
6) when finished, exit,	e [CR]
7) before loading next query, blank out the terminal screen buffer,	[PF1] b [CR]

Addendum to
User's Guide to Using the NTC Mission Databases

The following are SQL scripts for the examples in the *User's Guide To Using the ARI Mission Database*. In order to use these examples instead of the QUEL examples in the workbook, copy them into your account using the following command:

$ copy dual:[tacdb2.dbclass]sqlexamp.* sqlexamp.*

There will be seven files (example 8 and example 8b have been omitted) which are named sqlexamp.1 through sqlexamp.7. You must issue the following command to use Interactive SQL (instead of Interactive QUEL) at the $ prompt:

$ isql database-name

Example #1

```
/* PET example # 1:  Finding the force code of the firee (target)  */
/*                                                                  */
  select p.time,p.tpid,p.result,q.side     /* variables to output  */
    from PET p, PSIT q                 /* tables to use        */
   where p.tlpn = q.lpn               /* match tables on lpn  */
order by p.time                       /* sort by time         */
```

Example #2

```
/* PET example # 2: Finding the vehicle type of the firee using */
/* the PVWT (Player Vehicle Weapon Table)                       */
/*                                                              */
select  p.time, p.tpid, p.result, q.side, r.vehicle
from    PET p, PSIT q, PVWT r   /* tables to use                */
where   p.tlpn = q.lpn          /* match logical player numbers */
  and   q.side  = r.side        /* match on side                */
  and   q.ptype = r.ptype       /* match on player type         */
  and   r.vehicle != 'Abrams'   /* omit duplicates of tanks     */
order by p.time                 /* maintain chronological order */
```

Example #3

```
/* PET example # 3: Finding rows where the firer is known       */
/*                                                              */
select  p.time, p.fpid, p.result, q.side
from    PET p, PSIT q   /* use these tables              */
where   p.flpn = q.lpn  /* match on logical player #     */
  and   p.flpn > 0      /* firers lpn is non zero        */
order by p.time         /* maintain chronological order  */
```

Example #4

```
/* PET example # 4: Finding rows where the firer is known and      */
/* determine the firer's vehicle and weapon types.                 */
/* Note that here we can determine the side/ptype/miles of the firer*/
/* and thus we can make a unique match in the PVWT                 */
/*                                                                 */
   select p.time, p.fpid, p.result, q.side, r.vehicle, r.miles
     from PET p,  PSIT q,   PVWT r
     where p.flpn = q.lpn       /* match on logical player # (firer) */
        and q.side = r.side     /* match on force codes            */
        and q.ptype = r.ptype   /* match on player type codes      */
        and p.miles = r.miles   /* match on weapon codes           */
        and p.flpn > 0          /* firers lpn is greater than zero */
order by p.time                 /* maintain chronological order    */
```

Example #5

```
/* PET example # 5:   Combining the queries in examples 1 thru 4 we  */
/*                    come up with a complete picture of the engagement */
/*                                                                 */
select   distinct p.time,p.tpid,s.side,t.vehicle,p.fpid,
         p.result,q.side,r.vehicle,r.miles
     from PET p, PSIT q, PVWT r, PSIT s, PVWT t
     where p.flpn = q.lpn       /* match on logical player # (firer)   */
        and q.side = r.side     /* match on force codes (firer)        */
        and q.ptype = r.ptype   /* match on player type code (firer)   */
        and p.miles = r.miles   /* match on weapon codes  (firer)      */
        and p.flpn > 0          /* firers lpn is greater than zero     */
        and p.tlpn = s.lpn      /* match on logical player # (firee)   */
        and s.side = t.side     /* match on force codes (firee)        */
        and s.ptype = t.ptype   /* match on player type codes (firee)  */
        and t.vehicle != 'Abrams' /* omit Abrams from this query       */
        and p.frat = 'N'        /* omit fratricides                    */
order by p.time                 /* maintain chronological order        */
```

Example #6

```
/* Example # 6:   Matching Indirect Fire Casualties with fire mission. */
/*                                                                 */
   select distinct c.time, c.side, c.pid, m.side, m.org
     from IFCT c, IFMF m
     where c.fm = m.fm          /* match on fire mission numbers     */
order by c.time                 /* keep events in order              */
```

Example #7

```
/* Example # 7:   Check to see if indirect fire casuality was a result */
/*                of a pre-planned fire mission.                   */
/*                                                                 */
select c.time,c.side,c.pid,m.side,m.org,t.target
   from IFCT c,  IFMF m,   IFTT t
 where c.fm = m.fm            /* match on fire mission number       */
    and m.target = t.target   /* match on target name               */
```

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BDM INTERNATIONAL, INC.

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SUBMITTED BY HOWARD H. MCFANN, CHIEF
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AND
JACK H. HILLER, DIRECTOR
TRAINING RESEARCH LABORATORY

ROTATIONS 86-01 THROUGH 90-09

26 SEPTEMBER 1991

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The purpose of the NTC Mission Database Catalog is to provide users with a brief introduction to the Mission Database structure, a catalog listing of all databases available to date, and to document changes that have occurred over a period of time. In addition, Appendix A provides a detailed description of the structure of the 18 tables that comprise a Mission Database, as well as sample output from each table. This document is intended for users who have attended the ARI-CTC Archive Workshop and are already familiar with NTC data and operations.

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All other editions are obsolete

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CATALOG OF NTC MISSION DATABASES

FOREWORD

The Army Research Institute (ARI) has a major research program in support of the Combat Training Centers (CTCs) sponsored by the Training and Doctrinal Command and the Deputy Chief of Staff for Personnel. One of the principal goals of this program is the archival and development of CTC data. This catalog was developed in support of that effort under the program task entitled "Establish Procedures for Managing Data Archive for CTC Data and Records."

Edgar M. Johnson

Technical Director

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CATALOG OF NTC MISSION DATABASES
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INTRODUCTION TO NTC MISSION DATABASE CATALOG

PURPOSE

The purpose of the NTC Mission Database Catalog is to provide users with a brief introduction to the Mission Database structure, a catalog listing of all databases available to date, and to document changes that have occurred over a period of time. In addition, Appendix A provides a detailed description of the structure of the 18 tables that comprise a Mission Database, as well as sample output from each table. This document is intended for users who have attended the ARI-CTC Archive Workshop and are already familiar with NTC data and operations.

INTRODUCTION TO NTC DIGITAL DATA

Mission Databases include all relevant data from both NTC digital data sources, the CIS log and the RDMS log.

CORE INSTRUMENTATION SUBSYSTEM (CIS)

The CIS (Core Instrumentation Subsystem) is located at the NTC. CIS data consist of events electronically monitored in the field, summaries of those events, the state of units and players and the battlefield conditions. This is the central *brain* of the NTC instrumentation software, and the data from this software is the primary source of the Mission Databases. The structure of the Mission Databases is a reflection of the internal memory layout of the CIS.

RANGE DATA MEASUREMENT SYSTEM (RDMS)

The RDMS (Range Data Measurement System) log contains the raw events coming out of the field from the players' Micro-B units. This is the data stream that feeds the CIS. This data is used (when available and in a usable format) to augment the CIS data. In particular, the miles event codes from weapon systems are used to enhance the Pairing Event Table (PET) data.

DATA COLLECTION

Digital data collected at the NTC is divided into at least 2 histories, one for the Armored unit and one for the Mechanized unit. Each history can have up to forty-eight segments, where a segment is a period of time when a specific mission is being conducted. These segments can be After Action Reviews (AARs), recons, battles, such as Deliberate Attacks, Defend in Sector, Hasty Defend, Movement to Contact, etc. Each mission-level segment is a candidate for a unique Mission Database. The data from selected segments are processed by a program which builds the Mission Database.

INTRODUCTION TO MISSION DATABASES

The CIS and RDMS digital data selected for each Mission Database are organized into 18 tables. These tables were designed to include the maximum amount of information in a format that would facilitate access to the data for the kinds of research issues that have been defined to date. Table descriptions and structures are included at the end of the catalog in Appendix A. The table descriptions are simple and provide the structure and content of the tables without overwhelming the reader with complex computer jargon. More complete element definitions are available in the Programmers' Guide to NTC Data (1987, Briscoe and Baldwin), which provides a comprehensive guide to NTC digital data. For more detailed explanations and instructions for using the mission databases, refer to the User's Guide to ARI-NTC Mission Databases (1991, Baldwin).

DESCRIPTION OF NTC MISSION DATABASE TABLES

NTC Mission Databases consist of 18 tables, some containing "event driven" data, others containing "static" data. *Event data* usually include the presence of a time stamp with each occurrence of an event. *Static data* define the condition of the field and players during a mission. Static tables support the event tables. Following is a list of tables which make up each NTC mission database:

"EVENT" TABLES	"STATIC" TABLES
Fire Event Table (FET)	Mission Identification Table (MID)
Pairing Event Table (PET)	Player State Initialization Table (PSIT)
Indirect Fire Mission Fired (IFMF)	Unit State Initialization Table (USIT)
Indirect Fire Casualties Table (IFCT)	Unit Type Table (UTT)
Minefield Casualties Table (MCT)	Player Vehicle Weapon Table (PVWT)
Communications Table (CT)	Indirect Fire Target Table (IFTT)
Ground Player Location Table (GPLT)	Indirect Fire Group Table (IFGT)
Air Player Location Table (APLT)	
Player State Update Table (PSUT)	
Unit State Update Table (USUT)	
Control Measure (CM)	

Introduction To NTC Mission Database Catalog

This catalog contains a list of the mission databases currently available to users. Most databases can be accessed on the ARI-POM Vax 11/780 mini-computer. Since there is limited storage capacity on the VAX, older databases are stored off-line and must be loaded before they can be used. This catalog also indicates which version of INGRES should be used to access the databases. Mission databases constructed in INGRES 5 are not upwardly compatible with the newest upgrade to the INGRES relational database program. Mission databases from 8601 to 8914 must be accessed with INGRES 5. Mission databases from 9001 forward must be accessed with INGRES 6.

Training Research Automated Catalog System

TRACS is an automated catalog system that allows users to define a data set through the specification of selection criteria which will narrow the range of data available based on a specific research question or objective. For example, a data set could include attack missions for armored units during FY 1990. The selection criteria for this example are attack mission, armored unit, and 1990 rotations. TRACS also provides a gateway into a database, where data examination and manipulation can occur. The user can return to TRACS, select another mission, and continue to view data from various missions. The purpose of TRACS is to allow the researcher to gain an appreciation and understanding of the data selected prior to initiating a thorough analysis. To perform a complex analysis across one or more mission databases identified by TRACS, the researcher would move to other tools.

TRACS can only provide a gateway to databases built in INGRES 6. Therefore, only missions from 9001 forward can be accessed through TRACS, though missions from 8901 forward are cataloged. This catalog provides a listing of all the Mission Databases.

The following table provides information that identifies the portion of the CIS digital data that was used to build the databases for each mission or segment thereof, and describes the table structure.

Column Name	Column Description
mstart	start date and time for the current mission segment
mend	end date and time for the current mission segment
mhistory	the history of the current rotation assigned at the NTC
msegment	current mission segment sequence number
mtype	mission type, such as Deliberate Attack, Defend, Hasty Attack, Movement to Contact, etc.
msubtype*	mission segment, such as Movement, Recon, Main Battle*
morg	organization
mtf	mission task force type, such as Armor (A,R), Mech (M,E), Cav (C,V), Infantry (I,N), Light Infantry (L)
airpl	air player position location logging rate in seconds
gndpl	ground player position location logging rate in seconds
mdbname	mission database name
TRACS dbname	database name used to identify the mission in TRACS (dual database names apply 1989 missions only)
	to access these missions in INGRES, use the name from mdbname column

* applies to 1990 missions forward

1986 MISSION DATABASES - USE INGRES 5 TO ACCESS

20-SEP-1991 10:41:51

mstart	mend	mhistory	msegme	mtype	morg	mtf	alrpl	gndpl	mdbname
8601									
09 Oct 85 06:00:38	09 Oct 85 11:10:37	8601A0	007	DEFSEC	3-070 X 3-006	A	—	300	300 AA860107
10 Oct 85 02:32:36	10 Oct 85 16:17:35	8601A0	008	MTC	3-070 X 3-006	A	—	300	300 AA860108
11 Oct 85 03:27:47	11 Oct 85 18:04:31	8601A0	009	DATK	3-070 X 3-006	A	—	300	300 AA860109
20 Oct 85 05:48:30	20 Oct 85 14:11:23	8601A0	017	DATK	3-070 X 3-006	A	—	300	300 AA860117
21 Oct 85 05:10:34	21 Oct 85 14:11:03	8601A0	019	CATK	3-070 X 3-006	A	—	300	300 AA860119
24 Oct 85 04:38:26	24 Oct 85 15:26:26	8601A0	025	DEFBP	3-070 X 3-006	A	—	300	300 AA860125
08 Oct 85 06:23:24	08 Oct 85 09:21:24	8601M0	005	DEFBP	3-006 X 3-070	M	—	300	300 MA860105
09 Oct 85 08:15:14	09 Oct 85 13:10:13	8601M0	007	DEFBP	3-006 X 3-070	M	—	300	300 MA860107
20 Oct 85 06:10:42	20 Oct 85 10:12:41	8601M0	024	DATK	3-006 X 3-070	M	—	300	300 MA860124
21 Oct 85 12:05:40	21 Oct 85 15:56:39	8601M0	026	DATK	3-006 X 3-070	M	—	300	300 MA860126
23 Oct 85 06:51:30	23 Oct 85 10:17:30	8601M0	030	DEFBP	3-006 X 3-070	M	—	300	300 MA860130
8602									
04 Nov 85 05:50:52	04 Nov 85 12:45:52	8602A0	003	DEFSEC	4-064 X 5-137	A	—	300	300 AA860203
06 Nov 85 06:10:12	06 Nov 85 12:49:12	8602A0	006	DEFSEC	4-064 X 5-137	A	—	300	300 AA860206
07 Nov 85 04:33:44	07 Nov 85 13:48:44	8602A0	008	DATK	4-064 X 5-137	A	—	300	300 AA860208
08 Nov 85 07:25:18	08 Nov 85 12:37:18	8602A0	010	DATK	4-064 X 5-137	A	—	300	300 AA860210
04 Nov 85 06:12:32	04 Nov 85 10:58:31	8602M0	004	DEFBP	2-021	M	—	300	300 MA860204
05 Nov 85 10:59:28	05 Nov 85 13:22:27	8602M0	006	DATK	2-021	M	—	300	300 MA860206
07 Nov 85 06:00:04	07 Nov 85 09:42:03	8602M0	010	DEFBP	2-021	M	—	300	300 MA860210
8603									
01 Dec 85 06:29:10	01 Dec 85 20:17:10	8603A0	003	DATK	3-077 X 1-061	A	—	300	300 AA860303
02 Dec 85 06:55:34	02 Dec 85 12:27:34	8603A0	006	DATK	3-077 X 1-061	A	—	300	300 AA860306
01 Dec 85 04:51:56	01 Dec 85 11:44:56	8603M0	003	DATK	1-061 X 3-077	M	—	300	300 MA860303
02 Dec 85 05:40:46	02 Dec 85 12:14:46	8603M0	004	DATK	1-061 X 3-077	M	—	300	300 MA860304
11 Dec 85 06:00:38	11 Dec 85 10:25:38	8603M1	005	DEFBP	1-061 X 3-077	M	—	300	300 MB860305
12 Dec 85 05:55:54	12 Dec 85 13:27:54	8603M1	007	MTC	1-061 X 3-077	M	—	300	300 MB860307
13 Dec 85 04:25:52	13 Dec 85 12:21:52	8603M1	008	DATK	1-061 X 3-077	M	—	300	300 MB860308
14 Dec 85 07:27:16	14 Dec 85 16:43:15	8603M1	009	DATK	1-061 X 3-077	M	—	300	300 MB860309
8604									
06 Jan 87 07:08:36	06 Jan 87 12:09:36	8604M0	001	DATK	1-012 X 1-077	M	—	300	300 MA860401
07 Jan 87 05:49:24	07 Jan 87 12:35:24	8604M0	003	DATK	1-012 X 1-077	M	—	300	300 MA860403
09 Jan 87 06:00:21	09 Jan 87 12:57:21	8604M0	006	DEFBP	1-012 X 1-077	M	—	300	300 MA860406
10 Jan 87 08:30:38	10 Jan 87 12:42:38	8604M0	009	DATK	1-012 X 1-077	M	—	300	300 MA860409
12 Jan 87 07:50:43	12 Jan 87 13:40:43	8604M0	011	DEFSEC	1-012 X 1-077	M	—	300	300 MA860411
13 Jan 87 12:15:57	13 Jan 87 14:26:57	8604M0	012	DATK	1-012 X 1-077	M	—	300	300 MA860412
8605									
29 Jan 86 07:14:09	29 Jan 86 18:12:09	8605A0	002	DATK	2-005 X 2-007	A	—	300	300 AA860502
30 Jan 86 07:08:12	30 Jan 86 13:21:12	8605A0	003	DATK	2-005 X 2-007	A	—	300	300 AA860503
31 Jan 86 07:12:08	31 Jan 86 13:10:08	8605A0	006	DEFSEC	2-005 X 2-007	A	—	300	300 AA860506
01 Feb 86 07:23:56	01 Feb 86 08:50:52	8605A0	008	DEFSEC	2-005 X 2-007	A	—	300	300 AA860508
02 Feb 86 07:25:02	02 Feb 86 13:32:02	8605A0	010	DEFBP	2-005 X 2-007	A	—	300	300 AA860510
29 Jan 86 02:26:42	29 Jan 86 13:27:42	8605M0	003	DATK	2-007 X 2-005	M	—	300	300 MA860503
13 Feb 86 04:12:39	13 Feb 86 12:25:12	8605M2	011	DEFBP	2-007 X 2-005	M	—	300	300 MC860511
8606									
28 Feb 86 02:32:54	28 Feb 86 14:08:53	8606A0	006	DEFBP	2-069 X 3-007	A	—	300	300 AA860606
01 Mar 86 04:17:47	01 Mar 86 14:35:47	8606A1	001	DATK	2-069 X 3-007	A	—	300	300 AB860601
04 Mar 86 05:25:34	04 Mar 86 10:34:34	8606A1	009	DEFSEC	2-069 X 3-007	A	—	300	300 AB860609
28 Feb 86 04:29:35	28 Feb 86 11:54:24	8606M0	005	CATK	1-058 X 2-069	M	—	300	300 MB860605
09 Mar 86 03:55:02	09 Mar 86 10:09:25	8606M1	015	DEFBP	1-058 X 2-069	M	—	300	300 MB860615
10 Mar 86 04:37:32	10 Mar 86 10:43:32	8606M1	016	MTC	1-058 X 2-069	M	—	300	300 MB860616
11 Mar 86 04:22:56	11 Mar 86 12:18:20	8606M1	018	DATK	1-058 X 2-069	M	—	300	300 MB860618

mstart	mend	mhistory	msegme	mtype	morg	mtf	airpl	gndpl	mdbname
8607									
22 Mar 86 05:30:40	22 Mar 86 09:09:40	8607A0	002	MTC	3-066 X 2-041	A	—	300	300|AA860702
23 Mar 86 05:30:49	23 Mar 86 10:25:49	8607A0	004	DATK	3-066 X 2-041	A	—	300	300|AA860704
24 Mar 86 05:45:58	24 Mar 86 09:43:58	8607A0	006	DATK	3-066 X 2-041	A	—	300	300|AA860706
26 Mar 86 04:00:26	26 Mar 86 08:45:26	8607A0	009	DEFSEC	3-066 X 2-041	A	—	300	300|AA860709
02 Apr 86 08:30:57	02 Apr 86 12:42:57	8607A0	022	C ATK	3-066 X 2-041	A	—	300	300|AA860722
03 Apr 86 10:30:18	03 Apr 86 16:45:18	8607A0	024	DATK	3-066 X 2-041	A	—	300	300|AA860724
04 Apr 86 04:30:00	04 Apr 86 06:00:44	8607A0	025	DATK	3-066 X 2-041	A	—	300	300|AA860725
02 Apr 86 05:45:36	02 Apr 86 07:30:36	8607M0	019	DEFSEC	2-041 X 3-066	M	—	300	300|MA860719
8608									
16 Apr 86 04:01:30	16 Apr 86 11:28:30	8608A1	001	DATK	4-068 X 2-008	A	—	300	300|AB860801
17 Apr 86 02:17:07	17 Apr 86 08:34:04	8608A1	004	DATK	4-068 X 2-008	A	—	300	300|AB860804
19 Apr 86 02:31:46	19 Apr 86 10:42:46	8608A1	010	DEFBP	4-068 X 2-008	A	—	300	300|AB860810
29 Apr 86 01:56:56	29 Apr 86 07:37:20	8608A1	026	DATK	4-068 X 2-008	A	—	300	300|AB860826
29 Apr 86 07:43:18	29 Apr 86 11:31:18	8608A1	027	DATK	4-068 X 2-008	A	—	300	300|AB860827
30 Apr 86 03:21:43	30 Apr 86 10:44:43	8608A1	032	MTC	4-068 X 2-008	A	—	300	300|AB860832
01 May 86 05:51:32	01 May 86 11:04:32	8608A1	035	DEFSEC	4-068 X 2-008	A	—	300	300|AB860835
02 May 86 01:48:49	02 May 86 06:33:49	8608A1	037	DEFSEC	4-068 X 2-008	A	—	300	300|AB860837
02 May 86 07:21:55	02 May 86 11:49:39	8608A1	039	DEFSEC	4-068 X 2-008	A	—	300	300|AB860839
18 Apr 86 03:10:28	18 Apr 86 11:10:28	8608M1	009	DEFSEC	2-008 X 4-068	M	—	300	300|MB860809
19 Apr 86 07:25:32	19 Apr 86 14:52:32	8608M1	013	CATK	2-008 X 4-068	M	—	300	300|MB860813
29 Apr 86 05:47:42	29 Apr 86 13:11:42	8608M1	024	DATK	2-008 X 4-068	M	—	300	300|MB860824
02 May 86 07:34:53	02 May 86 15:29:05	8608M1	027	CATK	2-008 X 4-068	M	—	300	300|MB860827
8609									
14 May 86 05:45:15	14 May 86 13:00:15	8609A1	003	DATK	1-007 X 1-005	A	—	300	300|AB860903
21 May 86 05:25:58	21 May 86 09:15:58	8609A5	014	DEFSEC	1-007 X 1-005	A	—	300	300|AF860914
23 May 86 05:30:19	23 May 86 10:40:19	8609A5	020	DATK	1-007 X 1-005	A	—	300	300|AF860920
25 May 86 05:30:05	25 May 86 07:27:05	8609A5	025	DEFBP	1-007 X 1-005	A	—	300	300|AF860925
26 May 86 06:15:33	26 May 86 09:00:33	8609A5	027	C ATK	1-007 X 1-005	A	—	300	300|AF860927
13 May 86 07:15:00	01 Jan 80 00:00:00	8609M0	003	DATK	1-005 X 1-008	M	—	600	600|MA860903
14 May 86 10:24:11	14 May 86 15:00:11	8609M3	002	DATK	1-005 X 1-008	M	—	600	600|MB860902
16 May 86 05:20:54	16 May 86 12:28:54	8609M5	001	DEFSEC	1-005 X 1-008	M	—	600	600|MD860901
18 May 86 05:25:21	18 May 86 08:18:21	8609M5	001	DATK	1-005 X 1-008	M	—	600	600|MF860901
26 May 86 05:45:13	26 May 86 09:48:12	8609M5	014	DEFSEC	1-005 X 1-008	M	—	600	600|MF860914
8610									
11 Jun 86 05:33:34	11 Jun 86 14:13:34	8610A1	020	DATK	3-070 X 2-152	A	—	300	300|AB861020
12 Jun 86 05:28:24	12 Jun 86 10:54:24	8610A1	022	DATK	3-070 X 2-152	A	—	300	300|AB861022
13 Jun 86 05:00:37	13 Jun 86 09:51:37	8610A1	025	MTC	3-070 X 2-152	A	—	300	300|AB861025
15 Jun 86 02:36:40	15 Jun 86 08:08:40	8610A1	032	DEFSEC	3-070 X 2-152	A	—	300	300|AB861032
16 Jun 86 05:30:13	16 Jun 86 09:15:13	8610A1	034	DATK	3-070 X 2-152	A	—	300	300|AB861034
17 Jun 86 04:43:01	17 Jun 86 09:28:01	8610A1	037	DATK	3-070 X 2-152	A	—	300	300|AB861037
04 Jun 86 21:34:09	05 Jun 86 12:24:07	8610M1	002	RECON	2-156	M	—	300	300|MB861002
08 Jun 86 20:15:57	09 Jun 86 12:18:00	8610M1	007	RECON	2-156	M	—	300	300|MB861007
8612									
25 Jul 86 04:42:42	25 Jul 86 11:24:41	8612A0	006	DATK	1-263 X 2-034	A	—	300	300|AA861206
27 Jul 86 01:02:46	27 Jul 86 08:29:46	8612A1	004	DEFSEC	1-263 X 2-034	A	—	300	300|AB861204
28 Jul 86 03:22:44	28 Jul 86 09:53:44	8612A1	006	DATK	1-263 X 2-034	A	—	300	300|AB861206
30 Jul 86 02:15:19	30 Jul 86 09:35:12	8612A1	012	DEFSEC	1-263 X 2-034	A	—	300	300|AB861212
31 Jul 86 05:14:44	31 Jul 86 11:31:43	8612A1	014	DATK	1-263 X 2-034	A	—	300	300|AB861214
24 Jul 86 05:05:38	24 Jul 86 10:21:30	8612M0	006	DATK	2-034 X 1-263	M	—	300	300|MA861206
03 Aug 86 05:05:30	03 Aug 86 11:55:29	8612M1	014	DEFBP	2-034 X 1-263	M	—	300	300|MB861214

1986 Mission Databases - Use Ingres 5 to Access

mstart	mend	mhistory	msegme	mtype	morg	mtf	airpl	grndpl	mdbname
8613									
17 Aug 86 04:32:59	17 Aug 86 08:25:14	8613A0	006	DEFSEC	5-073 X 4-054	A	—	300	AA861306
18 Aug 86 06:57:50	18 Aug 86 12:49:21	8613A0	008	C ATK	5-073 X 4-054	A	—	300	AA861308
30 Aug 86 04:57:46	30 Aug 86 12:15:46	8613A2	003	DATK	5-073 X 4-054	A	—	300	AC861303
31 Aug 86 05:17:58	31 Aug 86 10:47:57	8613A2	004	DATK	5-073 X 4-054	A	—	300	AC861304
01 Sep 86 07:35:55	01 Sep 86 10:43:11	8613A2	005	DEFSEC	5-073 X 4-054	A	—	300	AC861305
01 Sep 86 23:20:42	02 Sep 86 09:31:23	8613A2	007	DEFBP	5-073 X 4-054	A	—	300	AC861307
16 Aug 86 02:17:10	16 Aug 86 16:22:09	8613M0	001	DATK	4-054 X 5-033	M	—	300	MA861301
17 Aug 86 04:18:29	17 Aug 86 09:08:09	8613M0	002	RECON	4-054 X 5-033	M	—	300	MA861302
18 Aug 86 06:54:34	18 Aug 86 13:48:33	8613M0	004	DEFBP	4-054 X 5-033	M	—	300	MA861304
8614									
18 Sep 86 06:32:48	18 Sep 86 12:23:47	8614A0	013	DATK	2-034 X 1-010	A	—	300	AA861413
19 Sep 86 20:46:30	20 Sep 86 04:16:30	8614A0	018	RECON	2-034 X 1-010	A	—	300	AA861418
20 Sep 86 04:16:32	20 Sep 86 08:02:10	8614A0	019	DEFBP	2-034 X 1-010	A	—	300	AA861419
21 Sep 86 03:46:20	21 Sep 86 11:57:19	8614A0	023	MTC	2-034 X 1-010	A	—	300	AA861423
23 Sep 86 05:15:24	23 Sep 86 15:08:24	8614A0	027	DEFSEC	2-034 X 1-010	A	—	300	AA861427
24 Sep 86 07:22:25	24 Sep 86 13:31:17	8614A0	029	C ATK	2-034 X 1-010	A	—	300	AA861429
26 Sep 86 04:48:34	26 Sep 86 12:54:32	8614A0	038	DATK	2-034 X 1-010	A	—	300	AA861438
14 Sep 86 09:24:45	14 Sep 86 14:06:10	8614M0	003	DATK	1-010	M	—	300	MA861403
15 Sep 86 06:32:25	15 Sep 86 09:42:08	8614M0	005	MTC	1-010	M	—	300	MA861405
16 Sep 86 21:21:15	17 Sep 86 16:59:32	8614M0	009	RECON	1-010	M	—	300	MA861409
23 Sep 86 15:56:47	24 Sep 86 05:09:19	8614M0	017	RECON	1-010	M	—	300	MA861417
24 Sep 86 05:09:26	24 Sep 86 13:06:25	8614M0	018	DEFBP	1-010	M	—	300	MA861418

20-SEP-1991 10:41:51

1987 MISSION DATABASES - USE INGRES 5 TO ACCESS

mstart	mend	mhistory	msegme	mtype	morg	mtf	airpl	gndpl	mdbname
8701									
08 Oct 86 05:00:58	08 Oct 86 11:35:57	8701A0	004	DATK	3-067	A		3001	300 AA870104
11 Oct 86 06:00:38	11 Oct 86 13:00:38	8701A0	009	DEFSEC	3-067	A		3001	300 AA870109
12 Oct 86 04:41:22	12 Oct 86 11:45:22	8701A0	011	MTC	3-067	A		3001	300 AA870111
13 Oct 86 05:15:38	13 Oct 86 06:18:38	8701A0	013	DATK	3-067	A		3001	300 AA870113
13 Oct 86 06:27:18	13 Oct 86 14:36:38	8701A0	014	DATK	3-067	A		3001	300 AA870113
15 Oct 86 06:00:26	15 Oct 86 12:00:25	8701A0	020	DEFSEC	3-067 X 4.2/FD	A		3001	300 AA870120
18 Oct 86 08:44:39	18 Oct 86 10:45:24	8701A0	024	DEFBP	3-067	A		3001	300 AA870124
07 Oct 86 05:00:18	07 Oct 86 14:45:18	8701M0	003	MTC	2-041	M		3001	300 MA870103
08 Oct 86 05:15:48	08 Oct 86 12:00:48	8701M0	006	DATK	2-041	M		3001	300 MA870106
10 Oct 86 06:00:44	10 Oct 86 09:15:44	8701M0	010	DEFBP	2-041	M		3001	300 MA870110
14 Oct 86 10:15:42	14 Oct 86 16:15:42	8701M0	018	C ATK	2-041	M		3001	300 MA870118
16 Oct 86 12:45:50	16 Oct 86 14:00:49	8701M0	021	RECON	2-041	M		3001	300 MA870121
18 Oct 86 04:30:48	18 Oct 86 11:45:48	8701M0	025	DEFSEC	2-041	M		3001	300 MA870125
19 Oct 86 04:15:14	19 Oct 86 11:15:13	8701M0	027	MTC	2-041	M		3001	300 MA870127
8702									
31 Oct 86 05:30:56	31 Oct 86 13:45:00	8702A0	002	DATK	5-032 X 3-019	A		3001	300 AA870202
03 Nov 86 03:22:25	03 Nov 86 09:15:00	8702A0	009	DEFSEC	5-032 X 3-019	A		3001	300 AA870209
10 Nov 86 05:30:52	10 Nov 86 10:30:51	8702A0	020	DATK	5-032 X 3-019	A		3001	300 AA870220
10 Nov 86 22:30:24	12 Nov 86 04:30:23	8702A0	024	RECON	5-032 X 3-019	A		3001	300 AA870224
12 Nov 86 05:00:38	12 Nov 86 08:05:00	8702A0	025	DEFSEC	5-032 X 3-019	A		3001	300 AA870225
12 Nov 86 08:06:57	12 Nov 86 10:00:57	8702A0	026	DEFSEC	5-032 X 3-019	A		3001	300 AA870226
13 Nov 86 05:00:08	13 Nov 86 08:30:07	8702A0	028	MTC	5-032 X 3-019	A		3001	300 AA870228
02 Nov 86 06:00:56	02 Nov 86 16:15:55	8702M0	007	DEFSEC	3-019 X 5-032	M		3001	300 MA870207
02 Nov 86 06:30:32	03 Nov 86 03:20:32	8702M0	008	DATK	3-019 X 5-032	M		3001	300 MA870208
05 Nov 86 07:20:16	05 Nov 86 10:00:15	8702M0	012	DATK	3-019 X 5-032	M		3001	300 MA870212
08 Nov 86 06:08:34	08 Nov 86 10:50:33	8702M0	020	DATK	3-019 X 5-032	M		3001	300 MA870220
8703									
25 Nov 86 04:30:48	25 Nov 86 10:15:15	8703A1	001	DATK	1-034 X 5-016	A		3001	300 AB870301
26 Nov 86 18:40:44	27 Nov 86 03:11:09	8703A1	003	RECON	1-034 X 5-016	A		6001	600 AB870303
27 Nov 86 04:15:02	27 Nov 86 10:45:02	8703A1	004	DEFSEC	1-034 X 5-016	A		3001	300 AB870304
28 Nov 86 09:00:38	28 Nov 86 12:14:38	8703A1	005	DATK	1-034 X 5-016	A		6001	600 AB870305
04 Dec 86 05:58:28	04 Dec 86 08:41:27	8703A1	015	DEFSEC	1-034 X 5-016	A		3001	300 AB870315
05 Dec 86 18:40:44	05 Dec 86 03:28:44	8703A1	017	RECON	1-034 X 5-016	A		6001	600 AB870317
05 Dec 86 06:45:00	05 Dec 86 08:15:00	8703A1	018	DEFBP	1-034 X 5-016	A		3001	300 AB870318
01 Dec 86 04:00:40	01 Dec 86 05:01:40	8703M0	016	RECON	5-016 X 1-034	M		3001	300 MA870316
01 Dec 86 05:01:40	01 Dec 86 11:15:49	8703M0	017	DATK	5-016 X 1-034	M		3001	300 MA870317
02 Dec 86 05:45:38	02 Dec 86 13:00:37	8703M0	019	DATK	5-016 X 1-034	M		3001	300 MA870319
05 Dec 86 06:20:20	05 Dec 86 10:15:19	8703M0	027	C ATK	5-016 X 1-034	M		3001	300 MA870327
8704									
11 Jan 87 23:36:25	12 Jan 87 03:06:25	8704A0	009	RECON	1-040 X 4-006	A		3001	300 AA870409
12 Jan 87 06:30:00	12 Jan 87 00:42:00	8704A0	010	DEFSEC	1-040 X 4-006	A		3001	300 AA870410
15 Jan 87 20:07:59	16 Jan 87 00:42:59	8704A0	019	DEFBP	1-040 X 4-006	A		6001	600 AA870419
18 Jan 87 10:45:57	18 Jan 87 13:30:57	8704A0	024	MTC	1-040 X 4-006	A		6001	600 AA870424
20 Jan 87 05:45:58	20 Jan 87 08:30:00	8704A0	028	DEFSEC	1-040 X 4-006	A		3001	300 AA870428
22 Jan 87 05:00:01	22 Jan 87 10:08:01	8704A0	032	DATK	1-040 X 4-006	A		3001	300 AA870432
10 Jan 87 05:30:23	10 Jan 87 14:30:23	8704M0	004	DATK	4-006 X 1-040	M		3001	300 MA870404
13 Jan 87 05:59:59	13 Jan 87 15:15:24	8704M0	011	DEFSEC	4-006 X 1-040	M		3001	300 MA870411
14 Jan 87 21:19:54	15 Jan 87 08:45:54	8704M0	014	DATK	4-006 X 1-040	M		3001	300 MA870414
16 Jan 87 20:36:59	17 Jan 87 02:35:59	8704M0	019	RECON	4-006 X 1-040	M		3001	300 MA870419
17 Jan 87 05:48:39	17 Jan 87 11:30:39	8704M0	020	DEFBP	4-006 X 1-040	M		3001	300 MA870420

mstart	mend	mhistory	msegme	mtype	morg	morg	mtf	airpl	gndpl	mdbname
8705										
05 Feb 87 07:02:19	03 Feb 87 15:15:19	8705A0	003	DATK	2-008	X 3-009	A		600	600 AA870503
05 Feb 87 06:15:17	05 Feb 87 08:55:17	8705A0	009	DEFSEC	2-008	X 3-009	A		300	300 AA870509
05 Feb 87 08:55:17	05 Feb 87 11:00:00	8705A0	010	DEFSEC	2-008	X 3-009	A		300	300 AA870509
06 Feb 87 05:38:59	06 Feb 87 14:43:59	8705A0	012	DATK	2-008	X 3-009	A		300	300 AA870512
07 Feb 87 06:29:05	07 Feb 87 12:51:05	8705A0	013	DATK	2-008	X 3-009	A		600	600 AA870513
08 Feb 87 22:31:52	09 Feb 87 04:34:07	8705A0	017	RECON	2-008	X 3-009	A		600	600 AA870517
09 Feb 87 05:00:51	09 Feb 87 08:11:51	8705A0	018	DEFSEC	2-008	X 3-009	A		300	300 AA870518
09 Feb 87 08:11:52	09 Feb 87 10:00:00	8705A0	019	DEFSEC	2-008	X 3-009	A		300	300 AA870518
13 Feb 87 20:21:31	14 Feb 87 00:12:06	8705A0	034	DEFBP	2-008	X 3-009	A		600	600 AA870534
11 Feb 87 23:15:36	12 Feb 87 03:35:36	8705M0	023	RECON	2-005		M		300	300 AA870523
12 Feb 87 05:00:33	12 Feb 87 11:30:33	8705M0	024	DEFSEC	2-005		M		300	300 MA870524
15 Feb 87 03:38:28	15 Feb 87 09:45:28	8705M0	031	RECON	2-005		M		300	300 MA870531
8706										
03 Mar 87 07:30:12	03 Mar 87 14:57:12	8706A0	014	DATK	3-068	X 1-008	A		600	600 AA870614
04 Mar 87 04:38:48	04 Mar 87 14:52:48	8706A0	016	DATK	3-068	X 1-008	A		600	600 AA870616
06 Mar 87 05:00:31	06 Mar 87 16:33:31	8706A0	020	DEFSEC	3-068	X 1-008	A		300	300 AA870620
07 Mar 87 09:00:15	07 Mar 87 14:31:15	8706A0	021	MTC	3-068	X 1-008	A		600	600 AA870621
09 Mar 87 06:11:35	09 Mar 87 10:24:35	8706A0	024	DEFSEC	3-068	X 1-008	A		300	300 AA870624
26 Mar 87 04:30:57	26 Mar 87 15:30:57	8706M0	004	DATK	1-012	X 3-068	M		300	300 MA870604
27 Feb 87 05:57:51	27 Feb 87 14:35:51	8706M0	006	MTC	1-012	X 3-068	M		300	300 MA870606
28 Feb 87 05:45:49	28 Feb 87 14:00:49	8706M0	010	H ATK	1-012	X 3-068	M		300	300 MA870610
02 Mar 87 05:00:34	02 Mar 87 12:45:34	8706M0	014	DEFBP	1-012	X 3-068	M		300	300 MA870614
08 Mar 87 05:15:01	08 Mar 87 11:55:01	8706M0	026	DATK	1-012	X 3-068	M		300	300 MA870626
10 Mar 87 04:31:43	10 Mar 87 09:30:43	8706M0	032	DEFSEC	1-012	X 3-068	M		300	300 MA870632
8707										
23 Mar 87 03:06:58	23 Mar 87 09:30:28	8707A0	003	DATK	2-252		A		600	600 AA870703
25 Mar 87 04:30:19	25 Mar 87 08:08:19	8707A0	007	RECON	2-252		A		0	0 AA870707
25 Mar 87 04:04:36	25 Mar 87 10:15:00	8707A0	008	DEFSEC	2-252		A		0	0 AA870707
31 Mar 87 03:24:51	31 Mar 87 11:41:00	8707A0	021	DATK	2-252		A		300	300 AA870721
01 Apr 87 23:35:18	02 Apr 87 03:45:45	8707A0	028	RECON	2-252		A		300	300 AA870728
02 Apr 87 03:45:49	02 Apr 87 15:30:00	8707A0	029	DEFSEC	2-252		A		300	300 AA870729
03 Apr 87 03:26:56	03 Apr 87 15:30:56	8707A0	032	MTC	2-252		A		300	300 AA870732
04 Apr 87 03:04:38	04 Apr 87 10:15:38	8707A0	034	H ATK	2-252		A		300	300 AA870734
24 Mar 87 09:30:46	24 Mar 87 16:00:46	8707M0	008	DEFSEC	3-041	X 2-252	M		300	300 MA870708
26 Mar 87 04:36:18	26 Mar 87 07:55:17	8707M0	011	DEFSEC	3-041	X 2-252	M		300	300 MA870711
27 Mar 87 04:50:48	27 Mar 87 15:15:48	8707M0	015	MTC	3-041	X 2-252	M		300	300 MA870715
30 Mar 87 06:16:00	30 Mar 87 11:00:00	8707M0	023	DEFSEC	3-041	X 2-252	M		300	300 MA870723
8708										
19 Apr 87 04:01:23	19 Apr 87 12:00:02	8708A0	010	DEFSEC	5-033	X 4-054	A		300	300 AA870810
19 Apr 87 22:45:43	20 Apr 87 03:15:43	8708A0	011	RECON	5-033	X 4-054	A		300	300 AA870811
20 Apr 87 05:35:00	20 Apr 87 14:05:00	8708A0	012	DEFSEC	5-033	X 4-054	A		300	300 AA870812
21 Apr 87 04:26:54	21 Apr 87 10:15:54	8708A0	015	DATK	5-033	X 4-054	A		300	300 AA870815
23 Apr 87 04:30:05	23 Apr 87 10:30:28	8708A0	018	DEFSEC	5-033	X 4-054	A		300	300 AA870818
17 Apr 87 04:00:10	17 Apr 87 13:30:10	8708M0	006	DATK	4-054	X 5-073	M		300	300 MA870806
19 Apr 87 04:45:22	19 Apr 87 10:05:22	8708M0	010	DEFBP	4-054	X 5-073	M		300	300 MA870810
25 Apr 87 05:45:43	25 Apr 87 12:30:43	8708M0	020	MTC	4-054	X 5-073	M		300	300 MA870820
27 Apr 87 05:05:43	27 Apr 87 14:45:43	8708M0	026	DEFSEC	4-054	X 5-073	M		300	300 MA870826
28 Apr 87 04:30:53	28 Apr 87 10:00:53	8708M0	028	DATK	4-054	X 5-073	M		300	300 MA870828
8709										
12 May 87 06:50:58	12 May 87 12:30:58	8709A0	010	DEFSEC	1-008		A		300	300 AA870910
11 May 87 04:15:16	11 May 87 12:30:37	8709M0	007	H ATK	1-005	X 5-001	M		300	300 MA870907
13 May 87 04:04:44	13 May 87 12:30:44	8709M0	013	DEFSEC	1-005	X 5-001	M		300	300 MA870913

1987 Mission Databases - Use Ingres 5 To Access

mstart	mend	mhistory	msegme	mtype	morg	mtf	airpl	gndpl	mdbname
8710									
06 Jun 87 05:37:14	06 Jun 87 11:06:14	8710A0	1014	DEFSEC	1-077 X 2-008	A		300	AA871014
13 Jun 87 22:36:31	14 Jun 87 03:28:31	8710A0	1031	RECON	1-077 X 2-008	A		300	AA871031
14 Jun 87 03:28:31	14 Jun 87 11:13:35	8710A0	1032	DEFSEC	1-077 X 2-008	A		300	AA871031
09 Jun 87 04:33:36	09 Jun 87 12:14:36	8710M0	1014	RECON	2-008 X 1-077	M		300	MA871014
13 Jun 87 05:54:28	13 Jun 87 13:15:28	8710M0	1026	DEFSEC	2-008 X 1-077	M		300	MA871026
15 Jun 87 03:44:50	15 Jun 87 13:05:09	8710M0	1029	D ATK	2-008 X DS BN	M		300	MA871029
8711									
15 Jul 87 08:59:27	15 Jul 87 11:38:10	8711A0	1012	DEFSEC	2-070	A		300	AA871112
16 Jul 87 05:30:19	16 Jul 87 09:46:58	8711A0	1015	DATK	2-070	A		300	AA871115
10 Jul 87 05:46:52	10 Jul 87 13:10:15	8711M0	1003	MTC	2-021 X 2-002	M		300	MA871103
12 Jul 87 02:32:43	12 Jul 87 08:43:43	8711M0	1006	DATK	2-021 X 2-002	M		300	MA871106
14 Jul 87 05:23:25	14 Jul 87 10:56:08	8711M0	1012	DEFSEC	2-021 X 2-002	M		300	MA871112
8712									
06 Aug 87 05:00:32	06 Aug 87 19:15:32	8712A0	1005	HATK	1-156 X 3-006	A		300	AA871205
08 Aug 87 04:40:44	08 Aug 87 10:45:43	8712A0	1008	DEFSEC	1-156 X 3-006	A		300	AA871208
12 Aug 87 04:08:50	12 Aug 87 10:15:50	8712A0	1021	MTC	1-156 X 3-006	A		300	AA871221
07 Aug 87 04:20:48	07 Aug 87 11:09:47	8712M0	1008	DEFSEC	3-006 X 1-156	M		600	MA871208
11 Aug 87 09:45:16	11 Aug 87 15:57:16	8712M0	1016	DATK	3-006 X DS BN	M		300	MA871216
17 Aug 87 06:17:34	17 Aug 87 13:29:33	8712M0	1033	DATK	3-006 X 1-156	M		300	MA871233
8713									
04 Sep 87 06:14:42	04 Sep 87 11:15:42	8713A0	1014	DEFSEC	2-069	A		300	AA871314
05 Sep 87 20:02:48	06 Sep 87 27:06:22	8713A0	1019	DATK	2-069	A		300	AA871319
09 Sep 87 05:30:24	09 Sep 87 13:59:23	8713A0	1025	DATK	2-069	A		300	AA871325
28 Aug 87 08:40:14	28 Aug 87 12:52:13	8713M0	1003	MTC	3-007 X 7-003	M		300	MA871303
30 Aug 87 05:30:16	30 Aug 87 11:25:15	8713M0	1008	DATK	3-007 X 7-003	M		300	MA871308
01 Sep 87 07:11:27	01 Sep 87 13:05:00	8713M0	1012	DEFSEC	3-007 X 7-003	M		300	MA871312
8714									
25 Sep 87 05:59:55	25 Sep 87 11:04:47	8714A0	1009	MTC	4-040 X 1-008	A		300	AA871409
27 Sep 87 06:15:21	27 Sep 87 12:48:14	8714A0	1014	DEFSEC	4-040 X 1-008	A		300	AA871414
29 Sep 87 06:11:41	29 Sep 87 11:12:00	8714A0	1021	DATK	4-040 X 1-008	A		300	AA871421
22 Sep 87 05:09:54	22 Sep 87 11:39:53	8714M0	1009	DATK	1-008 X 2-008	M		300	MA871409
24 Sep 87 05:08:00	24 Sep 87 08:33:21	8714M0	1015	DEFSEC	1-008 X 2-008	M		300	MA871415
02 Oct 87 04:30:32	02 Oct 87 13:30:00	8714M0	1029	MTC	1-008 X 2-008	M		60	MA871429

1988 MISSION DATABASES - USE INGRES 5 TO ACCESS

mstart	mend	mhistory	msegme	mtype	morg	mtf	airpl	gndpl	mdbname
8801									
16 Oct 87 06:35:52	16 Oct 87 14:16:51	8801A0	009	DEFSEC	3-003 X 2-003	A		300	300|AA880109
18 Oct 87 07:33:34	18 Oct 87 13:16:33	8801A0	014	MTC	3-003 X 2-003	A		300	300|AA880114
22 Oct 87 06:22:14	22 Oct 87 13:53:13	8801A0	028	DEFSEC	3-003 X 2-003	A		300	300|AA880128
14 Oct 87 06:30:56	14 Oct 87 16:01:56	8801M0	003	MTC	2-003	M		300	300|MA880103
16 Oct 87 05:36:32	16 Oct 87 12:10:31	8801M0	009	DEFSEC	2-003	M		300	300|MA880109
16 Oct 87 14:10:00	17 Oct 87 01:49:28	8801M0	010	DEFSEC	2-003	M		300	300|MA880110
26 Oct 87 05:12:48	26 Oct 87 11:13:48	8801M0	035	C ATK	2-003	M		300	300|MA880135
8802									
07 Nov 87 06:00:18	07 Nov 87 10:45:00	8802A0	002	MTC	3-077	A		300	300|AA880202
11 Nov 87 05:36:18	11 Nov 87 15:09:00	8802A0	012	DEFSEC	3-077	A		300	300|AA880212
19 Nov 87 04:29:56	19 Nov 87 11:54:56	8802A0	030	DEFSEC	3-077	A		300	300|AA880230
20 Nov 87 05:13:54	20 Nov 87 11:35:54	8802A0	032	DEFSEC	3-077	A		300	300|AA880232
12 Nov 87 07:05:54	12 Nov 87 12:37:54	8802M0	009	HATK	1-061 X 1-016	M		300	300|MA880209
13 Nov 87 06:08:00	13 Nov 87 10:07:01	8802M0	012	DATK	1-061 X 1-016	M		300	300|MA880212
15 Nov 87 05:41:57	15 Nov 87 12:41:56	8802M0	017	DEFSEC	1-061 X 1-016	M		300	300|MA880217
17 Nov 87 06:55:12	17 Nov 87 09:49:12	8802M0	020	DATK	1-061 X 1-016	M		300	300|MA880220
19 Nov 87 05:25:16	19 Nov 87 10:46:06	8802M0	028	DEFSEC	1-061 X 1-016	M		300	300|MA880228
20 Nov 87 05:30:26	20 Nov 87 10:25:09	8802M0	032	DEFSEC	1-061 X 1-016	M		300	300|MA880232
8803									
06 Dec 87 04:45:48	06 Dec 87 13:30:24	8803A0	013	MTC	4-037	A		300	300|AA880313
08 Dec 87 05:31:51	08 Dec 87 11:17:32	8803A0	020	DEFSEC	4-037	A		300	300|AA880320
09 Dec 87 04:45:34	09 Dec 87 12:00:34	8803A0	024	DATK	4-037	A		300	300|AA880324
12 Dec 87 04:30:54	12 Dec 87 10:00:53	8803A0	035	DEFSEC	4-037	A		300	300|AA880335
03 Dec 87 04:56:40	03 Dec 87 12:43:39	8803M0	009	DEFSEC	2-016 X 2-061	M		300	300|MA880309
12 Dec 87 04:28:13	12 Dec 87 08:55:06	8803M0	033	DEFSEC	2-016 X 2-061	M		300	300|MA880333
12 Dec 87 08:51:24	12 Dec 87 13:00:04	8803M0	034	DEFSEC	2-016 X 2-061	M		300	300|MA880333
8804									
11 Jan 88 00:03:53	11 Jan 88 09:29:21	8804A0	004	C ATK	4-064 EW	A		300	300|AA880404
12 Jan 88 22:44:44	13 Jan 88 05:01:44	8804A0	008	DEFSEC	4-064 X 3-007	A		300	300|AA880408
13 Jan 88 05:01:44	13 Jan 88 12:06:59	8804A0	009	DEFSEC	4-064 X 3-007	A		300	300|AA880408
14 Jan 88 04:35:34	14 Jan 88 15:41:34	8804A0	015	MTC	4-064 X 3-007	A		300	300|AA880415
20 Jan 88 04:53:39	20 Jan 88 11:19:00	8804A0	028	DEFSEC	4-064 X 3-007	A		300	300|AA880428
21 Jan 88 04:10:25	21 Jan 88 15:07:25	8804A0	033	DEFBP	4-064 X 3-007	A		300	300|AA880433
23 Jan 88 04:26:40	23 Jan 88 12:40:13	8804A0	042	H ATK	4-064 X 3-007	A		300	300|AA880442
16 Jan 88 05:48:19	16 Jan 88 13:32:10	8804M0	015	DEFSEC	3-007 X 3-070	M		300	300|MA880415
17 Jan 88 05:23:42	17 Jan 88 13:55:42	8804M0	017	MTC	3-007 X 3-070	M		300	300|MA880417
19 Jan 88 05:25:55	19 Jan 88 11:57:55	8804M0	022	DATK	3-007 X 3-070	M		300	300|MA880422
21 Jan 88 21:49:51	22 Jan 88 04:46:51	8804M0	032	RECON	3-007 X 3-070	M		300	300|MA880432
22 Jan 88 04:53:40	22 Jan 88 13:51:05	8804M0	033	DEFSEC	3-007 X 3-070	M		300	300|MA880432
23 Jan 88 02:40:00	23 Jan 88 14:57:34	8804M0	036	H ATK	3-007 X 3-070	M		300	300|MA880436
8805									
09 Feb 88 04:38:38	09 Feb 88 07:54:05	8805A3	002	DEFSEC	3-032	A		60	300|AD880502
11 Feb 88 01:51:42	11 Feb 88 09:00:00	8805A3	009	DATK	3-032	A		300	300|AD880509
14 Feb 88 04:30:11	14 Feb 88 11:30:00	8805A3	021	HATK	3-032	A		60	300|AD880521
15 Feb 88 05:58:58	15 Feb 88 14:00:00	8805A3	025	HATK	3-032	A		300	300|AD880525
16 Feb 88 05:23:45	16 Feb 88 12:00:44	8805A3	027	DEFSEC	3-032	A		300	300|AD880527
05 Feb 88 03:10:26	05 Feb 88 10:26:02	8805M1	005	DEFSEC	2-005 X 2-050	M		60	60|MB880505
07 Feb 88 05:50:39	07 Feb 88 14:00:19	8805M1	011	DATK	2-005 X 2-050	M		300	300|MB880511
14 Feb 88 04:44:36	14 Feb 88 12:00:00	8805M3	023	DEFSEC	2-005 X 2-050	M		300	300|MB880523
15 Feb 88 05:56:43	15 Feb 88 15:00:30	8805M3	026	H ATK	2-005 X 2-050	M		300	300|MD880526
16 Feb 88 05:09:41	16 Feb 88 12:00:31	8805M3	028	DEFSEC	2-005 X 2-050	M		300	300|MD880528

mstart	mend	mhistory	msegme	mtype	morg	lmorg	mtf	lalrpl	grndpl	mdbname
8806										
04 Mar 88 02:03:54	04 Mar 88 11:55:15	8806A0	014	DATK	2-034	X 5-016	A	—	300	300|AA880614
06 Mar 88 04:16:59	06 Mar 88 05:36:59	8806A0	020	DEFSEC	2-034	X 5-016	A	—	300	300|AA880620
06 Mar 88 05:35:40	06 Mar 88 12:16:13	8806A0	021	DEFSEC	2-034	X 5-016	A	—	300	300|AA880620
08 Mar 88 03:15:55	08 Mar 88 06:12:30	8806A0	027	DATK	2-034	X 5-016	A	—	300	300|AA880627
08 Mar 88 06:12:23	08 Mar 88 14:16:37	8806A0	028	DATK	2-034	X 5-016	A	—	300	300|AA880627
08 Mar 88 14:16:22	08 Mar 88 18:48:50	8806A0	029	DATK	2-034	X 5-016	A	—	300	300|AA880627
09 Mar 88 04:33:30	09 Mar 88 10:00:30	8806A0	034	DATK	2-034	X 4.2/FD	A	—	300	300|AA880634
11 Mar 88 04:20:56	11 Mar 88 11:22:56	8806A0	045	DEFSEC	2-034	X 5-016	A	—	300	300|AA880645
02 Mar 88 07:35:50	02 Mar 88 14:00:00	8806M0	018	DEFSEC	5-016	X 2-034	M	—	300	300|AA880618
08 Mar 88 07:30:27	08 Mar 88 16:35:27	8806M0	032	DATK	5-016	X 2-034	M	—	300	300|MA880632
10 Mar 88 20:06:53	11 Mar 88 03:42:22	8806M0	037	RECON	5-016	X 2-034	M	—	300	300|MA880637
11 Mar 88 03:52:05	11 Mar 88 15:10:43	8806M0	038	DEFSEC	5-016	X 2-034	M	—	300	300|MA880637
8807										
27 Mar 88 08:15:49	27 Mar 88 11:00:00	8807A0	020	MTC	1-066	X 3-041	A	—	300	300|AA880720
04 Apr 88 06:00:26	04 Apr 88 09:30:00	8807A0	055	DEFSEC	1-066	X 3-041	A	—	300	300|AA880755
25 Mar 88 19:34:59	26 Mar 88 02:35:20	8807M0	013	C ATK	3-041	X 1-066	M	—	300	300|MA880713
02 Apr 88 06:00:20	02 Apr 88 09:00:00	8807M0	030	DATK	3-041	X 1-066	M	—	300	300|MA880730
8808										
15 Apr 88 05:34:12	15 Apr 88 12:14:01	8808A0	004	MTC	1-010	X 4-015	A	—	300	300|AA880804
26 Apr 88 04:20:47	26 Apr 88 10:32:34	8808A0	037	HATK	1-010	X 4-015	A	—	300	300|AA880837
28 Apr 88 05:25:39	28 Apr 88 12:00:00	8808A0	053	DEFSEC	1-010	X 4-015	A	—	300	300|AA880853
20 Apr 88 04:50:37	20 Apr 88 12:30:37	8808M0	010	HATK	4-015	X 1-010	M	—	300	300|MA880810
22 Apr 88 04:25:45	22 Apr 88 07:30:00	8808M0	018	DEFSEC	4-015	X DS BN	M	—	300	300|MA880818
23 Apr 88 03:20:50	23 Apr 88 09:22:50	8808M0	021	HATK	4-015	X 1-010	M	—	300	300|MA880821
26 Apr 88 07:30:55	26 Apr 88 09:30:00	8808M0	029	DATK	4-015	X 1-010	M	—	300	300|MA880829
28 Apr 88 06:45:15	28 Apr 88 09:00:00	8808M0	035	DEFSEC	4-015	X 1-010	M	—	300	300|MA880835
8809										
08 May 88 08:30:21	08 May 88 10:30:00	8809A0	004	MTC	2-060	X 2-001	A	—	300	300|AA880904
19 May 88 07:30:00	19 May 88 10:00:00	8809A0	039	DEFSEC	2-060	X 2-001	A	—	300	300|AA880939
8810										
07 Jun 88 02:17:45	07 Jun 88 05:30:00	8810A0	019	DEFSEC	4-068	X 2-008	A	—	300	300|AA881019
08 Jun 88 05:00:33	08 Jun 88 08:42:33	8810A0	022	MTC	4-068	X 2-008	A	—	300	300|AA881022
11 Jun 88 07:00:40	11 Jun 88 10:16:40	8810A0	034	MTC	4-068	X 2-008	A	—	300	300|AA881034
01 Jun 88 06:30:52	01 Jun 88 10:30:00	8810M0	007	MTC	2-008	X 4-068	M	—	300	300|MA881007
03 Jun 88 06:00:12	03 Jun 88 09:52:12	8810M0	014	DEFSEC	2-008	X 4-068	M	—	300	300|MA881014
05 Jun 88 00:05:14	05 Jun 88 04:00:14	8810M0	023	C ATK	2-008	X 4-068	M	—	300	300|MA881023
14 Jun 88 05:00:12	14 Jun 88 08:30:00	8810M0	053	DATK	2-008	X 4-068	M	—	300	300|MA881053
8811										
08 Jul 88 07:15:48	08 Jul 88 11:44:00	8811A0	003	DATK	2-152		A	—	300	300|AA881103
20 Jul 88 08:05:30	20 Jul 88 10:05:00	8811A0	040	CATK	2-152		A	—	300	300|AA881140
21 Jul 88 04:45:44	21 Jul 88 09:05:00	8811A0	043	HATK	2-152		A	—	300	300|AA881143
13 Jul 88 04:45:54	13 Jul 88 12:15:54	8811M0	014	H ATK	4-006		M	—	300	300|MA881114
15 Jul 88 04:04:20	15 Jul 88 08:05:00	8811M0	019	DATK	4-006		M	—	300	300|MA881119
8812										
06 Aug 88 04:45:02	06 Aug 88 10:04:00	8812A0	014	MTC	1-064		A	—	300	300|AA881214
08 Aug 88 04:45:20	08 Aug 88 07:46:00	8812A0	021	DEFSEC	1-064		A	—	300	300|AA881221
10 Aug 88 06:45:18	10 Aug 88 09:21:18	8812A0	030	DATK	1-064		A	—	300	300|AA881230
14 Aug 88 05:30:26	14 Aug 88 08:28:26	8812A0	049	CATK	1-064		A	—	300	300|AA881249
01 Aug 88 08:48:42	01 Aug 88 11:18:00	8812M0	004	HATK	3-019		M	—	300	300|MA881204
02 Aug 88 23:36:00	03 Aug 88 04:06:00	8812M0	009	DEFSEC	3-019		M	—	300	300|MA881209
11 Aug 88 08:30:08	11 Aug 88 11:05:00	8812M0	027	MTC	3-019		M	—	300	300|MA881227
12 Aug 88 05:40:40	12 Aug 88 08:40:40	8812M0	030	HATK	3-019		M	—	300	300|MA881230
14 Aug 88 05:45:42	14 Aug 88 07:45:00	8812M0	036	HATK	3-019		M	—	300	300|MA881236

mstart	mend	mhistory	msegme	mtype	morg	mtf	airpl	gndpl	mdbname
8813									
25 Aug 88 06:05:54	25 Aug 88 08:35:36	8813A0	004	MTC	2-077	A		300	300 AA881304
27 Aug 88 00:36:48	27 Aug 88 04:33:00	8813A0	011	DATK	2-077	A		300	300 AA881311
29 Aug 88 05:05:28	29 Aug 88 07:06:27	8813A0	021	DEFSEC	2-077	A		300	300 AA881321
05 Sep 88 07:10:16	05 Sep 88 10:10:15	8813A0	039	MTC	2-077	A		300	300 AA881339
07 Sep 88 07:04:46	07 Sep 88 10:30:45	8813A0	047	DATK	2-077	A		300	300 AA881347
31 Aug 88 07:25:13	31 Aug 88 08:55:00	8813M0	018	MTC	1-010	M		300	300 MA881318
02 Sep 88 05:48:46	02 Sep 88 07:48:45	8813M0	026	DATK	1-010	M		300	300 MA881326
04 Sep 88 04:40:39	04 Sep 88 07:10:13	8813M0	035	DEFSEC	1-010	M		300	300 MA881335
05 Sep 88 07:00:24	05 Sep 88 10:30:24	8813M0	039	MTC	1-010	M		300	300 MA881339
8814									
25 Sep 88 01:58:10	25 Sep 88 05:28:09	8814A0	018	DEFSEC	3-067	A		300	300 AA881418
27 Sep 88 03:02:36	27 Sep 88 30:02:36	8814A0	023	DATK	3-067	A		300	300 AA881423
28 Sep 88 06:00:26	28 Sep 88 10:30:14	8814A0	028	MTC	3-067	A		300	300 AA881428
29 Sep 88 05:30:18	29 Sep 88 09:06:17	8814A0	031	MTC	3-067	A		300	300 AA881431
18 Sep 88 07:37:18	18 Sep 88 10:29:17	8814M0	005	HATK	1-067/AR	M		300	300 MA881405
22 Sep 88 06:00:08	22 Sep 88 10:00:07	8814M0	017	DEFSEC	1-067/AR	M		300	300 MA881417
27 Sep 88 03:23:04	27 Sep 88 06:54:04	8814M0	021	DEFBP	3-067 X 4.2/FD	M		600	600 MA881421
27 Sep 88 11:20:44	27 Sep 88 13:33:43	8814M0	022	DEFBP	3-067 X 4.2/FD	M		600	600 MA881422
29 Sep 88 06:39:52	29 Sep 88 09:39:43	8814M0	030	MTC	1-067/AR	M		600	300 MA881430
01 Oct 88 07:02:42	01 Oct 88 07:32:41	8814M0	038	DATK	1-067/AR	M		300	300 MA881438

20-SEP-1991 10:41:51

1989 MISSION DATABASES - USE INGRES 5 TO ACCESS

mstart	mend	mhistory	msegme	mtype	morg	mtf	lairpl	lgndpl	mdbname	TRACS dbname
8901										
14 Oct 88 06:01:32	14 Oct 88 09:01:32	8901A0	012	DEFSEC	1-070 X 4.2/FD	A	—	300	300|AA890112	—
16 Oct 88 06:00:48	16 Oct 88 08:03:47	8901A0	021	DATK	1-070 X 4.2/FD	A	—	300	300|AA890121	—
19 Oct 88 10:14:58	19 Oct 88 12:15:00	8901A0	027	DEFSEC	1-070 X 4.2/FD	A	—	300	300|AA890127	—
19 Oct 88 20:03:42	19 Oct 88 22:57:41	8901A0	029	DEFSEC	1-070 X 4.2/FD	A	—	300	300|AA890129	—
22 Oct 88 03:15:44	22 Oct 88 04:43:16	8901A0	036	MTC	1-070 X 4.2/FD	A	—	300	300|AA890136	—
22 Oct 88 05:42:00	22 Oct 88 09:32:48	8901A0	037	MTC	1-070 X 4.2/FD	A	—	300	300|AA890137	—
22 Oct 88 09:46:27	22 Oct 88 11:16:10	8901A0	038	MTC	1-070 X 4.2/FD	A	—	300	300|AA890138	—
23 Oct 88 07:59:16	23 Oct 88 10:29:15	8901A0	042	DATK	1-070 X 4.2/FD	A	—	300	300|AA890142	—
17 Oct 88 07:00:48	17 Oct 88 09:10:47	8901M0	015	MTC	1-061 X 4.2/FD	M	—	300	300|MA890115	—
21 Oct 88 08:15:34	21 Oct 88 10:24:05	8901M0	034	DEFSEC	1-061 X 4.2/FD	M	—	300	300|MA890134	—
25 Oct 88 08:10:32	25 Oct 88 10:10:32	8901M0	051	DATK	1-061 X 4.2/FD	M	—	300	300|MA890151	—
8902										
12 Nov 88 08:58:52	12 Nov 88 10:58:51	8902A0	032	DEFSEC	3-068 X BDE TO	A	—	300	300|AA890232	—
14 Nov 88 06:00:10	14 Nov 88 09:09:10	8902A0	038	DATK	3-068 X BDE TO	A	—	300	300|AA890238	—
17 Nov 88 07:00:38	17 Nov 88 09:06:38	8902A0	053	DATK	3-068 X BDE TO	A	—	300	300|AA890253	—
06 Nov 88 06:02:46	06 Nov 88 08:22:45	8902M0	009	DEFSEC	1-012 X 1-120	M	—	300	300|MA890209	—
08 Nov 88 05:33:16	08 Nov 88 07:33:16	8902M0	015	DATK	3-068 X 1-120	M	—	300	300|MA890215	—
09 Nov 88 07:03:20	09 Nov 88 09:32:30	8902M0	020	MTC	3-068 X 1-120	M	—	300	300|MA890220	—
15 Nov 88 06:57:32	15 Nov 88 10:45:31	8902M0	033	MTC	3-068 X 1-120	M	—	300	300|MA890233	—
8903										
29 Nov 88 06:48:08	29 Nov 88 10:49:07	8903A0	004	MTC	3-069 X 4.2/FD	A	—	300	300|AA890304	—
01 Dec 88 06:12:44	01 Dec 88 09:12:25	8903A0	014	DATK	3-069 X 4.2/FD	A	—	300	300|AA890314	—
03 Dec 88 07:11:56	03 Dec 88 09:51:55	8903A0	024	DEFSEC	3-069 X 4.2/FD	A	—	300	300|AA890324	—
11 Dec 88 08:56:36	11 Dec 88 10:53:35	8903A0	053	DATK	3-069 X 4.2/FD	A	—	300	300|AA890353	—
04 Dec 88 05:55:50	04 Dec 88 09:58:49	8903M0	018	DEFSEC	2-007 X 4.2/FD	M	—	300	300|MA890318	—
05 Dec 88 09:43:37	05 Dec 88 12:54:15	8903M0	026	MTC	2-007 X 4.2/FD	M	—	300	300|MA890326	—
07 Dec 88 07:15:00	07 Dec 88 09:16:59	8903M0	033	DEFSEC	2-007 X 4.2/FD	M	—	300	300|MA890333	—
09 Dec 88 06:30:00	09 Dec 88 08:39:00	8903M0	045	DATK	2-007 X 4.2/FD	M	—	300	300|MA890345	—
8904										
09 Jan 89 06:37:36	09 Jan 89 08:43:36	8904A0	011	DEFSEC	1-032 X BDE TO	A	—	300	300|AA890411	N894A_09
11 Jan 89 06:00:11	11 Jan 89 08:13:11	8904A0	021	DATK	1-032 X BDE TO	A	—	300	300|AA890421	N894A_11
12 Jan 89 07:30:01	12 Jan 89 10:02:01	8904A0	027	MTC	1-032 X BDE TO	A	—	300	300|AA890427	N894A_12
18 Jan 89 05:30:26	18 Jan 89 11:01:26	8904A0	052	MTC	1-032 X BDE TO	A	—	300	300|AA890452	N894A_18
13 Jan 89 06:13:04	13 Jan 89 10:50:04	8904M0	016	MTC	1-005 X 4.2/FD	M	—	300	300|MA890416	N894_C15
15 Jan 89 06:48:17	15 Jan 89 09:26:17	8904M0	025	DEFSEC	1-005 X 4.2/FD	M	—	300	300|MA890425	N894_C13
16 Jan 89 19:13:00	16 Jan 89 23:04:41	8904M0	034	N ATK	1-005 X 4.2/FD	M	—	300	300|MA890434	N894_C16
18 Jan 89 05:38:50	18 Jan 89 11:55:50	8904M0	037	H ATK	1-005 X 4.2/FD	M	—	300	300|MA890437	N894_C18
19 Jan 89 23:06:23	19 Jan 89 07:07:03	8904M0	043	DATK	1-005 X 4.2/FD	M	—	300	300|MA890443	N894_C20
21 Jan 89 04:56:32	21 Jan 89 10:23:32	8904M0	046	D ATK	1-005 X 4.2/FD	M	—	300	300|MA890446	N894_C21
8905										
06 Feb 89 06:08:49	06 Feb 89 08:17:49	8905A0	020	CATK	3-037 X 2-136	A	—	300	300|AA890520	N895A_06
08 Feb 89 05:05:53	08 Feb 89 12:00:53	8905A0	033	D ATK	3-037 X 2-136	A	—	300	300|AA890533	N895A_08
10 Feb 89 06:35:09	10 Feb 89 08:56:09	8905A0	045	DEFSEC	3-037 X 2-136	A	—	300	300|AA890545	N895A_10
11 Feb 89 04:55:58	11 Feb 89 08:55:58	8905A0	053	DEF SEC	1-005 X 2-136	A	—	300	300|AA890553	N895A_11
13 Feb 89 04:55:51	13 Feb 89 09:42:51	8905A0	063	D ATK	3-037 X 2-136	A	—	300	300|AA890563	N895A_13
14 Feb 89 05:25:26	14 Feb 89 11:47:25	8905A0	069	D ATK	3-037 X 2-136	A	—	300	300|AA890569	N895A_14
01 Feb 89 07:09:22	01 Feb 89 09:21:22	8905M0	003	MTC	2-136 X 4.2/FD	M	—	300	300|MA890503	N895_M01
05 Feb 89 07:12:45	05 Feb 89 09:21:45	8905M0	022	DATK	2-136 X 4.2/FD	M	—	300	300|MA890522	N895_M05
11 Feb 89 05:57:25	11 Feb 89 08:57:25	8905M0	041	CATK	2-136 X 4.2/FD	M	—	300	300|MA890541	N895_M11
13 Feb 89 06:24:57	13 Feb 89 09:24:25	8905M0	049	DATK	2-136 X 4.2/FD	M	—	300	300|MA890549	N895_M13
14 Feb 89 06:25:35	14 Feb 89 08:25:35	8905M0	053	HATK	2-136 X 4.2/FD	M	—	300	300|MA890553	N895_M14

mstart	mend	mhistory	msegme	mtype	morg	mtf	lairp1	alrp1	gndp1	mdbname	TRACS dbname
8906											
03 Mar 89 07:35:55	03 Mar 89 09:52:55	8906A0	026	DATK	3-070 X BDE TO	A	—		300	300|AA890626	N896A_03
05 Mar 89 05:42:07	05 Mar 89 07:12:07	8906A0	032	DEFSEC	3-070 X BDE TO	A	—		300	300|AA890632	N896A_05
07 Mar 89 08:08:12	07 Mar 89 09:38:11	8906A0	042	MTC	3-070 X BDE TO	A	—		300	300|AA890642	N896A_07
09 Mar 89 04:59:42	09 Mar 89 07:29:42	8906A0	050	DATK	3-070 X BDE TO	A	—		300	300|AA890650	N896A_09
10 Mar 89 05:09:38	10 Mar 89 11:00:09	8906A0	058	D ATK	3-070 X BDE TO	A	—		300	300|AA890658	N896A_10
25 Feb 89 06:49:52	25 Feb 89 08:53:52	8906M0	004	MTC	3-006 X 6-003	M	—		300	300|MA890604	N896_M25
27 Feb 89 05:25:46	27 Feb 89 06:55:46	8906M0	012	DATK	3-006 X 6-003	M	—		300	300|MA890612	N896_M27
01 Feb 89 05:02:46	01 Feb 89 10:50:51	8906M0	021	DEFSEC	3-070 X 6-003	M	—		300	300|MA890621	N896_M01
09 Mar 89 04:40:23	09 Mar 89 08:47:23	8906M0	047	D ATK	3-070 X 6-003	M	—		300	300|MA890647	N896_M09
10 Mar 89 06:40:22	10 Mar 89 10:10:17	8906M0	052	DATK	3-006 X 6-003	M	—		300	300|MA890652	N896_M10
8907											
21 Mar 89 06:11:29	21 Mar 89 08:41:29	8907A0	006	MTC	1-033 X BDE TO	A	—		300	300|AA890706	N897A_21
23 Mar 89 07:54:41	23 Mar 89 09:54:41	8907A1	012	DEFSEC	1-033 X BDE TO	A	—		300	300|AB890712	N897A_23
01 Apr 89 05:46:38	01 Apr 89 07:46:38	8907A1	044	CATK	1-033 X BDE TO	A	—		300	300|AB890744	N897A_01
02 Apr 89 06:05:46	02 Apr 89 08:05:27	8907A1	047	MTC	1-033 X BDE TO	A	—		300	300|AB890747	N897A_02
27 Mar 89 02:10:51	27 Mar 89 04:25:51	8907M1	021	DEFSEC	2-023 X 4.2/FD	M	—		300	300|MB890721	N897_I27
30 Mar 89 06:57:44	30 Mar 89 09:57:12	8907M1	034	MTC	2-023 X 4.2/FD	M	—		300	300|MB890734	N897_I30
01 Apr 89 05:05:29	01 Apr 89 07:50:29	8907M1	040	DEFSEC	2-023 X 4.2/FD	M	—		300	300|MB890740	N897_I01
02 Apr 89 06:30:37	02 Apr 89 10:05:37	8907M1	042	MTC	2-023 X 4.2/FD	M	—		300	300|MB890742	N897_I02
03 Apr 89 06:00:32	03 Apr 89 09:00:01	8907M1	045	DATK	2-023 X 4.2/FD	M	—		300	300|MB890745	N897_I03
8908											
20 Apr 89 04:04:20	20 Apr 89 09:34:12	8908A0	019	D ATK	2-069 X 1-058	A	—		300	300|AA890819	N898A_20
25 Apr 89 07:40:12	25 Apr 89 09:40:12	8908A0	053	HATK	2-069 X 1-058	A	—		300	300|AA890853	N898A_25
27 Apr 89 07:51:33	27 Apr 89 09:21:33	8908A0	061	DATK	2-069 X 1-058	A	—		300	300|AA890861	N898A_27
14 Apr 89 08:25:33	14 Apr 89 10:55:33	8908M0	006	MTC	1-058 X 2-058	M	—		300	300|MA890806	N898_M14
16 Apr 89 22:41:28	16 Apr 89 02:52:19	8908M0	017	DEFSEC	1-058 X 2-058	M	—		300	300|MA890817	N898_M15
18 Apr 89 06:00:10	18 Apr 89 08:28:10	8908M0	030	DATK	1-058 X 2-058	M	—		300	300|MA890830	N898_M18
25 Apr 89 05:51:53	25 Apr 89 08:21:53	8908M0	065	HATK	1-058 X 2-058	M	—		300	300|MA890865	N898_M25
27 Apr 89 05:30:42	27 Apr 89 11:51:03	8908M0	070	D ATK	1-058 X 2-058	M	—		300	300|MA890870	N898_M27
8909											
08 May 89 09:12:45	08 May 89 11:36:10	8909A0	005	MTC	1-003 X 4.2/FD	A	—		300	300|AA890905	N899C_08
08 May 89 11:35:30	08 May 89 13:35:12	8909A0	006	MTC	1-003 X 4.2/FD	A	—		300	300|AA890906	N899C_08
10 May 89 04:13:59	10 May 89 07:42:09	8909A0	013	DEFSEC	1-003 X 4.2/FD	A	—		300	300|AA890913	N899C_10
11 May 89 09:34:25	11 May 89 11:12:08	8909A0	020	HATK	1-003 X 4.2/FD	A	—		300	300|AA890920	N899C_11
18 May 89 06:38:05	18 May 89 09:08:05	8909A0	046	MTC	1-003 X 4.2/FD	A	—		300	300|AA890946	N899C_18
19 May 89 06:41:06	19 May 89 10:11:00	8909A0	052	HATK	1-003 X 4.2/FD	A	—		300	300|AA890952	N899C_19
21 May 89 07:40:17	21 May 89 10:10:17	8909A0	066	DATK	1-003 X 4.2/FD	A	—		300	300|AA890966	N899C_21
13 May 89 21:21:14	13 May 89 23:51:14	8909M0	025	DEFSEC	3-003 X 2-003	M	—		300	300|MA890925	N899_V13
15 May 89 05:02:46	15 May 89 07:35:22	8909M0	031	MTC	3-003 X 2-003	M	—		300	300|MA890931	N899_V15
16 May 89 05:26:54	16 May 89 12:51:54	8909M0	036	MTC	3-003 X 2-003	M	—		300	300|MA890936	N899_V16
18 May 89 06:15:31	18 May 89 09:14:30	8909M0	041	MTC	3-003 X 2-003	M	—		300	300|MA890941	N899_V18
19 May 89 06:05:06	19 May 89 10:18:06	8909M0	046	HATK	3-003 X 2-003	M	—		300	300|MA890946	N899_V19
21 May 89 06:40:22	21 May 89 10:21:22	8909M0	054	CATK	3-003 X 2-003	M	—		300	300|MA890954	N899_V21
8910											
07 Jun 89 05:06:41	07 Jun 89 07:36:41	8910A0	020	DEFSEC	1-077 X BDE TO	A	—		300	300|AA891020	N89AA_07
08 Jun 89 05:41:49	08 Jun 89 10:41:39	8910A0	026	MTC	1-077 X BDE TO	A	—		300	300|AA891026	N89AA_08
10 Jun 89 05:32:13	10 Jun 89 09:02:13	8910A0	037	DATK	1-077 X BDE TO	A	—		300	300|AA891037	N89AA_10
12 Jun 89 05:45:55	12 Jun 89 12:10:04	8910A0	045	D ATK	1-077 X BDE TO	A	—		300	300|AA891045	N89AA_12
01 Jun 89 07:10:41	01 Jun 89 10:00:41	8910M0	005	MTC	2-120 X 4.2/FD	M	—		300	300|MA891005	N89A_M01
03 Jun 89 07:40:57	03 Jun 89 10:56:57	8910M0	012	DEFSEC	2-120 X 4.2/FD	M	—		300	300|MA891012	N89A_M03
05 Jun 89 05:00:13	05 Jun 89 07:47:13	8910M0	021	DATK	2-120 X 4.2/FD	M	—		300	300|MA891021	N89A_M05
12 Jun 89 06:16:10	12 Jun 89 09:59:03	8910M0	040	DATK	2-120 X 4.2/FD	M	—		300	300|MA891040	N89A_M12
13 Jun 89 06:31:37	13 Jun 89 10:01:18	8910M0	045	DATK	2-120 X 4.2/FD	M	—		300	300|MA891045	N89A_M13

1989 Mission Databases - Use Ingres 5 To Access

mstart	mend	mhistory	msegme	mtype	morg	mtf	alrp1	gndp1	mdbname	TRACS dbname
8911										
11 Jul 89 05:08:56	11 Jul 89 08:38:56	8911A0	019	DATK	2-008 X BDE TO	A		300	300|AA891119	N89BC_11
13 Jul 89 05:34:59	13 Jul 89 07:56:28	8911A0	027	DEFSEC	2-008 X BDE TO	A		300	300|AA891127	N89BC_13
19 Jul 89 07:09:57	19 Jul 89 09:48:05	8911A0	054	HATK	2-008 X BDE TO	A		300	300|AA891154	N89BC_19
20 Jul 89 06:20:43	20 Jul 89 10:38:00	8911A0	060	MTC	2-008 X BDE TO	A		300	300|AA891160	N89BC_20
15 Jul 89 05:50:34	15 Jul 89 09:09:04	8911M0	016	DEFSEC	2-005 X 4.2/FD	M		300	300|MA891116	N89B_C15
16 Jul 89 06:25:24	16 Jul 89 09:30:24	8911M0	022	MTC	2-008 X 4.2/FD	M		300	300|MA891122	N89B_C16
19 Jul 89 08:05:56	19 Jul 89 09:57:39	8911M0	034	MTC	2-008 X 4.2/FD	M		300	300|MA891134	N89B_C19
20 Jul 89 07:00:28	20 Jul 89 09:24:01	8911M0	040	MTC	2-005 X 4.2/FD	M		300	300|MA891140	N89B_C20
8912										
03 Aug 89 05:04:28	03 Aug 89 08:40:21	8912A0	013	DEFSEC	1-064 X 3-007	A		300	300|AA891213	N89CA_03
06 Aug 89 03:29:47	06 Aug 89 08:26:00	8912A0	037	DATK	1-064 X 3-007	A		300	300|AA891237	N89CA_06
12 Aug 89 07:30:37	12 Aug 89 10:00:28	8912A0	067	MTC	1-064 X 3-007	A		300	300|AA891267	N89CA_12
08 Aug 89 04:21:36	08 Aug 89 08:31:35	8912M0	036	DEFSEC	3-007 X 4.2/FD	M		300	300|MA891236	N89C_M08
10 Aug 89 06:54:30	10 Aug 89 08:51:07	8912M0	051	DATK	3-007 X 4.2/FD	M		300	300|MA891251	N89C_M10
11 Aug 89 04:24:54	11 Aug 89 07:27:53	8912M0	055	DATK	3-007 X 4.2/FD	M		300	300|MA891255	N89C_M11
12 Aug 89 09:10:18	12 Aug 89 11:10:17	8912M0	060	MTC	3-007 X 4.2/FD	M		300	300|MA891260	N89C_M12
8913										
04 Sep 89 07:00:24	04 Sep 89 09:00:23	8913A0	051	DEFSEC	1-034 X 5-016	A		300	300|AA891351	N89DA_04
06 Sep 89 07:55:44	06 Sep 89 09:55:44	8913A0	061	DATK	1-034 X 5-016	A		300	300|AA891361	N89DA_06
07 Sep 89 06:16:08	07 Sep 89 10:46:07	8913A0	066	HATK	1-034 X 5-016	A		300	300|AA891366	N89DA_07
08 Sep 89 08:41:48	08 Sep 89 10:11:47	8913A0	073	HATK	1-034 X 5-016	A		300	300|AA891373	N89DA_08
27 Aug 89 05:24:46	27 Aug 89 07:57:45	8913M0	006	DEFSEC	2-034 X 4.2/FD	M		300	300|MA891306	N89D_R27
28 Aug 89 05:35:18	28 Aug 89 08:35:18	8913M0	011	MTC	2-034 X 4.2/FD	M		300	300|MA891311	N89D_R28
30 Aug 89 07:54:57	30 Aug 89 11:24:43	8913M0	023	DATK	2-034 X 4.2/FD	M		300	300|MA891323	N89D_R30
07 Sep 89 08:40:48	07 Sep 89 11:14:48	8913M0	058	HATK	2-034 X 4.2/FD	M		300	300|MA891358	N89D_R07
08 Sep 89 07:14:44	08 Sep 89 09:14:00	8913M0	063	HATK	2-034 X 4.2/FD	M		300	300|MA891363	N89D_R08
8914										
19 Sep 89 02:45:52	19 Sep 89 07:02:51	8914A0	004	MTC	4-041 X 4-041	A		300	300|AA891404	N89EA_19
21 Sep 89 07:22:08	21 Sep 89 09:22:07	8914A0	016	DEFSEC	4-041 X 4-041	A		300	300|AA891416	N89EA_21
30 Sep 89 07:27:12	30 Sep 89 10:57:07	8914A0	058	DATK	1-066 X 4-041	A		300	300|AA891458	N89EA_30
24 Sep 89 05:29:36	24 Sep 89 09:29:07	8914M0	038	MTC	4-041 X 4.2/FD	M		300	300|MA891438	N89E_M24
28 Sep 89 05:45:54	28 Sep 89 08:15:53	8914M0	062	DEF SEC	4-041 X 4.2/FD	M		300	300|MA891462	N89E_M28
30 Sep 89 09:55:28	30 Sep 89 12:20:27	8914M0	066	DATK	4-041 X 4.2/FD	M		300	300|MA891466	N89E_M30

1990 MISSION DATABASES

INTRODUCTION

The 1990 mission databases are constructed following a set of guidelines contained in Mission Critical Event Sheets. These Mission Critical Event Sheets are compiled by ARI-POM SMEs who examine the mission using various sources of data including the Take Home Package, AAR tapes, unit plans and orders, staff journals, and graphics overlays. A time-line of key battlefield events associated with mission execution is constructed, indicating such events as OPORDS, FRAGOS, Recon and Counter-Recons, LDs, Attacks, Counterattacks, and End of Mission. These sheets also include the task force's combat organization, the mission statement and commander's intent for the mission.

The start and end time of the mission segments are determined by an SME using the Mission Critical Event Sheets. The database is built using the position location logging rate indicated by the SME for each mission segment. A mission may have several segments. The following example shows a Hasty Defend mission with 6 segments. Notice that the logging rate of the air and ground position location varies for each segment, from 1200 seconds - or every 20 minutes during the Ctr-Recon, to 300 seconds - or every 5 minutes during the main battle. This information is useful when replaying the battle with the battle replay tools such as GNATT II, MPART and TBAT.

	mstart	mend	mhisto	msegme	mtype	msubtype	airpl	gndpl	mdbname
1.	04-Dec-89 07:10:00	04-Dec-89 07:50:44	9003A0	19	Hasty Defend	Movement	900	900	N903C_04
	04-Dec-89 07:50:45	04-Dec-89 10:50:00	9003A0	20	Hasty Defend	Movement	900	900	N903C_04
2.	04-Dec-89 10:50:01	04-Dec-89 12:56:47	9003A0	20	Hasty Defend	Ctr-Recon	1200	1200	N903C_04
3.	04-Dec-89 16:04:52	04-Dec-89 16:57:15	9003A0	21	Hasty Defend	Ctr-Recon	1200	1200	N903C_04
4.	04-Dec-89 18:28:02	05-Dec-89 02:00:52	9003A0	22	Hasty Defend	Ctr-Recon	1200	1200	N903C_04
5.	05-Dec-89 03:20:55	05-Dec-89 08:00:00	9003A0	23	Hasty Defend	Movement	600	600	N903C_04
6.	05-Dec-89 08:00:01	05-Dec-89 10:04:43	9003A0	23	Hasty Defend	MainBattle	300	300	N903C_04
	05-Dec-89 10:04:44	05-Dec-89 10:42:00	9003A0	24	Hasty Defend	MainBattle	300	300	N903C_04

1990 MISSION DATABASES - USE INGRES 6 TO ACCESS

20-SEP-1991 15:00:58

9001

mstart	mend	mhisto	msegme	mtype	msubtype	morg	mtf	airpl	gndpl	mdbname
17-Oct-89 17:25:33	17-Oct-89 19:03:03	9001A0	35	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1800	1800	N901C_18
17-Oct-89 19:43:14	17-Oct-89 19:59:43	9001A0	36	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1800	1800	N901C_18
17-Oct-89 21:48:22	18-Oct-89 00:22:25	9001A0	37	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1800	1800	N901C_18
18-Oct-89 00:50:16	18-Oct-89 06:00:36	9001A0	38	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1800	1800	N901C_18
18-Oct-89 06:35:32	18-Oct-89 06:52:03	9001A0	39	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1800	1800	N901C_18
18-Oct-89 09:49:42	18-Oct-89 12:41:53	9001A0	40	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1800	1800	N901C_18
18-Oct-89 14:21:21	18-Oct-89 16:00:00	9001A0	41	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1800	1800	N901C_18
18-Oct-89 16:00:01	18-Oct-89 17:40:00	9001A0	41	Defend	MainBattle	1-003 X 2-3ACR	C_	300	300	N901C_18
20-Oct-89 03:00:00	20-Oct-89 04:00:00	9001A0	48	Deliberate Attack	Movement	1-003 X 2-3ACR	C_	300	300	N901C_20
20-Oct-89 04:00:01	20-Oct-89 05:50:00	9001A0	48	Deliberate Attack	MainBattle	1-003 X 2-3ACR	C_	300	300	N901C_20
21-Oct-89 14:28:06	21-Oct-89 15:08:53	9001A0	57	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1200	1200	N901C_22
21-Oct-89 18:51:02	21-Oct-89 19:26:39	9001A0	58	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1200	1200	N901C_22
21-Oct-89 20:16:11	21-Oct-89 20:27:01	9001A0	59	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1200	1200	N901C_22
21-Oct-89 21:04:52	21-Oct-89 21:46:25	9001A0	60	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1200	1200	N901C_22
21-Oct-89 21:46:25	22-Oct-89 03:00:28	9001A0	61	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1200	1200	N901C_22
22-Oct-89 03:00:28	22-Oct-89 05:46:14	9001A0	62	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1200	1200	N901C_22
22-Oct-89 05:46:14	22-Oct-89 06:00:00	9001A0	63	Defend	Ctr-Recon	1-003 X 2-3ACR	C_	1200	1200	N901C_22
22-Oct-89 06:00:01	22-Oct-89 07:35:00	9001A0	63	Defend	MainBattle	1-003 X 2-3ACR	C_	300	300	N901C_22
23-Oct-89 07:35:00	23-Oct-89 08:35:00	9001A0	70	Hasty Attack	Movement	1-003 X 2-3ACR	C_	300	300	N901C_23
23-Oct-89 07:35:01	23-Oct-89 10:45:00	9001A0	70	Hasty Attack	MainBattle	1-003 X 2-3ACR	C_	300	300	N901C_23
25-Oct-89 06:00:00	25-Oct-89 10:30:00	9001A0	80	Hasty Attack	Movement	1-003 X 2-3ACR	C_	900	900	N901C_25
25-Oct-89 10:30:01	25-Oct-89 12:05:00	9001A0	80	Hasty Attack	MainBattle	1-003 X 2-3ACR	C_	300	300	N901C_25
26-Oct-89 07:00:00	26-Oct-89 08:15:00	9001A0	86	Hasty Attack	Movement	1-003 X 2-3ACR	C_	600	600	N901C_26
26-Oct-89 08:15:01	26-Oct-89 10:15:00	9001A0	86	Hasty Attack	MainBattle	1-003 X 2-3ACR	C_	300	300	N901C_26
13-Oct-89 05:45:31	13-Oct-89 08:30:00	9001M0	4	Movement to Contact	MainBattle	2-003 X 2-3ACR	_V	300	300	N901_V13
14-Oct-89 06:04:48	14-Oct-89 07:00:00	9001M0	9	Hasty Attack	Movement	2-003 X 2-3ACR	_V	600	600	N901_V14
14-Oct-89 07:00:01	14-Oct-89 10:25:18	9001M0	9	Hasty Attack	MainBattle	2-003 X 2-3ACR	_V	300	300	N901_V14
15-Oct-89 22:00:00	16-Oct-89 04:27:04	9001M0	18	Defend	Ctr-Recon	2-003 X 2-3ACR	_V	1200	1200	N901_V16
16-Oct-89 05:30:01	16-Oct-89 07:40:00	9001M0	19	Defend	Movement	2-003 X 2-3ACR	_V	600	600	N901_V16
16-Oct-89 07:40:01	16-Oct-89 09:15:00	9001M0	19	Defend	MainBattle	2-003 X 2-3ACR	_V	300	300	N901_V16
25-Oct-89 05:30:21	25-Oct-89 08:00:00	9001M0	71	Movement to Contact	Movement	2-003 X 2-3ACR	_V	900	900	N901_V25
25-Oct-89 08:00:01	25-Oct-89 12:00:00	9001M0	71	Movement to Contact	MainBattle	2-003 X 2-3ACR	_V	300	300	N901_V25
26-Oct-89 07:00:00	26-Oct-89 08:30:00	9001M0	78	Hasty Attack	MainBattle	2-003 X 2-3ACR	_V	300	300	N901_V26

9002

mstart	mend	mhisto	msegme	mtype	msubtype	morg	mtf	airp1	gndp1	mdbname
11-Nov-89 05:45:00	11-Nov-89 08:10:00	9002A0	25	Counterattack	MainBattle	4-035 X 3-006	A_		300	N902A_01
13-Nov-89 05:15:00	13-Nov-89 06:30:00	9002A0	35	Deliberate Attack	Movement	4-035 X 3-006	A_	600	600	N902A_13
13-Nov-89 06:30:01	13-Nov-89 10:00:00	9002A0	35	Deliberate Attack	MainBattle	4-035 X 3-006	A_	300	300	N902A_13
14-Nov-89 20:00:00	15-Nov-89 01:35:52	9002A0	44	Defend	Ctr-Recon	4-035 X 3-006	A_	900	900	N902A_15
15-Nov-89 01:35:53	15-Nov-89 02:30:00	9002A0	45	Defend	Ctr-Recon	4-035 X 3-006	A_	900	900	N902A_15
15-Nov-89 02:30:01	15-Nov-89 06:40:00	9002A0	45	Defend	MainBattle	4-035 X 3-006	A_	600	600	N902A_15
16-Nov-89 07:30:00	16-Nov-89 09:00:00	9002A0	51	Hasty Attack	Movement	4-035 X 3-006	A_	600	600	N902A_16
16-Nov-89 09:00:01	16-Nov-89 11:00:00	9002A0	51	Hasty Attack	MainBattle	4-035 X 3-006	A_	300	300	N902A_16
17-Nov-89 06:20:00	17-Nov-89 08:30:00	9002A0	56	Hasty Attack	MainBattle	4-035 X 3-006	A_	300	300	N902A_17
17-Nov-89 08:30:01	17-Nov-89 11:30:28	9002A0	56	Hasty Attack	Ctr-Recon	4-035 X 3-006	A_	900	900	N902A_17
17-Nov-89 11:30:29	17-Nov-89 12:10:00	9002A0	57	Hasty Attack	Ctr-Recon	4-035 X 3-006	A_	900	900	N902A_17
17-Nov-89 12:10:01	17-Nov-89 13:10:00	9002A0	57	Hasty Attack	MainBattle	4-035 X 3-006	A_	300	300	N902A_17
18-Nov-89 18:29:25	18-Nov-89 19:00:00	9002A0	65	Deliberate Attack	Ctr-Recon	4-035 X 3-006	A_	600	600	N902A_19
18-Nov-89 19:00:01	18-Nov-89 19:44:48	9002A0	65	Deliberate Attack	Movement	4-035 X 3-006	A_	1800	1800	N902A_19
19-Nov-89 04:57:28	19-Nov-89 09:40:00	9002A0	66	Deliberate Attack	Movement	4-035 X 3-006	A_	1800	1800	N902A_19
19-Nov-89 09:40:01	19-Nov-89 11:20:00	9002A0	66	Deliberate Attack	MainBattle	4-035 X 3-006	A_	300	300	N902A_19
06-Nov-89 05:30:00	06-Nov-89 09:30:00	9002M0	4	Movement to Contact	MainBattle	3-006 X 4-035	_M	300	300	N902_M06
07-Nov-89 21:00:00	08-Nov-89 05:59:43	9002M0	13	Defend	Ctr-Recon	3-006 X 4-035	_M	1200	1200	N902_M08
08-Nov-89 05:59:44	08-Nov-89 08:20:00	9002M0	14	Defend	MainBattle	3-006 X 4-035	_M	300	300	N902_M08
09-Nov-89 20:15:00	10-Nov-89 21:30:00	9002M0	23	Deliberate Attack	Movement	3-006 X 4-035	_M	600	600	N902_M09
09-Nov-89 21:30:01	10-Nov-89 00:02:00	9002M0	23	Deliberate Attack	MainBattle	3-006 X 4-035	_M	300	300	N902_M09
15-Nov-89 19:44:04	16-Nov-89 20:30:00	9002M0	53	Hasty Attack	Movement	3-006 X 4-035	_M	900	900	N902_M16
15-Nov-89 20:30:01	16-Nov-89 03:42:49	9002M0	53	Hasty Attack	Recon	3-006 X 4-035	_M	1800	1800	N902_M16
16-Nov-89 03:59:57	16-Nov-89 04:20:59	9002M0	54	Hasty Attack	Recon	3-006 X 4-035	_M	1800	1800	N902_M16
16-Nov-89 05:55:37	16-Nov-89 06:00:00	9002M0	55	Hasty Attack	Recon	3-006 X 4-035	_M	1800	1800	N902_M16
16-Nov-89 06:00:01	16-Nov-89 11:00:00	9002M0	55	Hasty Attack	MainBattle	3-006 X 4-035	_M	300	300	N902_M16
17-Nov-89 06:00:04	17-Nov-89 12:00:00	9002M0	59	Hasty Attack	Movement	3-006 X 4-035	_M	900	900	N902_M17
17-Nov-89 12:00:01	17-Nov-89 13:10:00	9002M0	59	Hasty Attack	MainBattle	3-006 X 4-035	_M	300	300	N902_M17
19-Nov-89 06:15:00	19-Nov-89 09:00:00	9002M0	65	Deliberate Attack	Movement	3-006 X 4-035	_M	600	600	N902_M19
19-Nov-89 09:00:01	19-Nov-89 11:20:00	9002M0	65	Deliberate Attack	MainBattle	3-006 X 4-035	_M	300	300	N902_M19

mstart	mend	mhisto	msegme	mtype	msubtype	morg	mtf	airpl	grndpl	mdbname
9003										
01-Dec-89 17:02:12	01-Dec-89 18:54:16	9003A0	9	Defend	Ctr-Recon	1-008 X 1-032	C_	1800	1800	N903C_02
01-Dec-89 20:03:21	02-Dec-89 02:06:31	9003A0	10	Defend	Ctr-Recon	1-008 X 1-032	C_	1800	1800	N903C_02
02-Dec-89 03:19:53	02-Dec-89 05:15:16	9003A0	11	Defend	Ctr-Recon	1-008 X 1-032	C_	1800	1800	N903C_02
02-Dec-89 05:14:51	02-Dec-89 06:00:00	9003A0	12	Defend	Ctr-Recon	1-008 X 1-032	C_	1800	1800	N903C_02
02-Dec-89 06:00:00	02-Dec-89 06:40:00	9003A0	12	Defend	Mvmt/Mnvr	1-008 X 1-032	C_	600	600	N903C_02
02-Dec-89 06:40:01	02-Dec-89 08:15:00	9003A0	12	Defend	Objective	1-008 X 1-032	C_	300	300	N903C_02
03-Dec-89 06:50:00	03-Dec-89 07:30:00	9003A0	15	Hasty Attack	Mvmt/Mnvr	1-008 X 1-032	C_	300	300	N903C_03
03-Dec-89 07:30:01	03-Dec-89 09:10:00	9003A0	15	Hasty Attack	Objective	1-008 X 1-032	C_	300	300	N903C_03
04-Dec-89 07:10:00	04-Dec-89 07:50:44	9003A0	19	Hasty Defend	Movement	1-008 X 1-032	C_	900	900	N903C_04
04-Dec-89 07:50:45	04-Dec-89 10:50:00	9003A0	20	Hasty Defend	Movement	1-008 X 1-032	C_	900	900	N903C_04
04-Dec-89 10:50:01	04-Dec-89 12:56:47	9003A0	20	Hasty Defend	Ctr-Recon	1-008 X 1-032	C_	1200	1200	N903C_04
04-Dec-89 16:04:52	04-Dec-89 16:57:15	9003A0	21	Hasty Defend	Ctr-Recon	1-008 X 1-032	C_	1200	1200	N903C_04
04-Dec-89 18:28:02	05-Dec-89 02:00:52	9003A0	22	Hasty Defend	Ctr-Recon	1-008 X 1-032	C_	1200	1200	N903C_04
05-Dec-89 03:20:55	05-Dec-89 08:00:00	9003A0	23	Hasty Defend	Movement	1-008 X 1-032	C_	600	600	N903C_04
05-Dec-89 08:00:01	05-Dec-89 10:04:43	9003A0	23	Hasty Defend	Objective	1-008 X 1-032	C_	300	300	N903C_04
05-Dec-89 10:04:44	05-Dec-89 10:42:00	9003A0	24	Hasty Defend	Objective	1-008 X 1-032	C_	300	300	N903C_04
12-Dec-89 08:00:00	12-Dec-89 11:40:00	9003A0	57	Deliberate Attack	Movement	1-008 X 1-032	C_	900	900	N903C_12
12-Dec-89 11:40:01	12-Dec-89 13:30:00	9003A0	57	Deliberate Attack	MainBattle	1-008 X 1-032	C_	300	300	N903C_12
13-Dec-89 05:30:00	13-Dec-89 10:10:00	9003A0	62	Deliberate Attack	MainBattle	1-008 X 1-032	C_	300	300	N903C_13
05-Dec-89 06:00:01	05-Dec-89 07:45:14	9003M0	35	Defend	MainBattle	1-032 X 1-008	_A	300	300	N903_A05
30-Nov-89 06:30:00	30-Nov-89 07:45:00	9003A0	4	Movement to Contact	Mvmt/Mnvr	1-008 X 1-032	C_	600	600	N903C_30
30-Nov-89 07:45:01	30-Nov-89 09:30:00	9003A0	4	Movement to Contact	Objective	1-008 X 1-032	C_	300	300	N903C_30
04-Dec-89 20:00:00	04-Dec-89 21:02:12	9003M0	34	Defend	Ctr-Recon	1-032 X 1-008	_A	1200	1200	N903_A05
04-Dec-89 21:14:08	05-Dec-89 06:00:00	9003M0	35	Defend	Ctr-Recon	1-032 X 1-008	_A	1200	1200	N903_A05
05-Dec-89 07:45:05	05-Dec-89 10:15:00	9003M0	36	Defend	MainBattle	1-032 X 1-008	_A	300	300	N903_A05
07-Dec-89 01:39:01	07-Dec-89 05:26:45	9003M0	43	Deliberate Attack	Movement	1-032 X 1-008	_A	1200	1200	N903_A07
07-Dec-89 06:25:04	07-Dec-89 07:30:00	9003M0	44	Deliberate Attack	Movement	1-032 X 1-008	_A	1200	1200	N903_A07
07-Dec-89 07:30:01	07-Dec-89 08:15:00	9003M0	44	Deliberate Attack	MainBattle	1-032 X 1-008	_A	300	300	N903_A07
09-Dec-89 00:01:00	09-Dec-89 05:40:00	9003M0	48	Defend	Ctr-Recon	1-032 X 1-008	_A	900	900	N903_A09
09-Dec-89 05:40:01	09-Dec-89 06:10:09	9003M0	48	Defend	MainBattle	1-032 X 1-008	_A	300	300	N903_A09
09-Dec-89 06:10:00	09-Dec-89 08:45:00	9003M0	49	Defend	MainBattle	1-032 X 1-008	_A	300	300	N903_A09
10-Dec-89 03:11:46	10-Dec-89 04:24:00	9003M0	52	Counterattack	Ctr-Recon	1-032 X 1-008	_A	1200	1200	N903_A10
10-Dec-89 12:05:30	10-Dec-89 13:01:14	9003M0	53	Counterattack	Ctr-Recon	1-032 X 1-008	_A	1200	1200	N903_A10
10-Dec-89 15:25:19	10-Dec-89 17:35:03	9003M0	54	Counterattack	Movement	1-032 X 1-008	_A	900	900	N903_A10
10-Dec-89 17:34:55	10-Dec-89 18:45:00	9003M0	55	Counterattack	Movement	1-032 X 1-008	_A	900	900	N903_A10
10-Dec-89 18:45:01	10-Dec-89 20:45:00	9003M0	55	Counterattack	MainBattle	1-032 X 1-008	_A	300	300	N903_A10
10-Dec-89 18:46:00	10-Dec-89 20:45:00	9003M0	55	Counterattack	MainBattle	1-032 X 1-008	_A	300	300	N903_A10
12-Dec-89 06:56:29	12-Dec-89 09:20:00	9003M0	60	Deliberate Attack	Movement	1-032 X 1-008	_A	600	600	N903_A12
12-Dec-89 09:20:01	12-Dec-89 10:00:00	9003M0	60	Deliberate Attack	Recon	1-032 X 1-008	_A	300	300	N903_A12
12-Dec-89 10:00:01	12-Dec-89 10:40:00	9003M0	60	Deliberate Attack	Movement	1-032 X 1-008	_A	600	600	N903_A12
12-Dec-89 10:40:01	12-Dec-89 14:00:00	9003M0	60	Deliberate Attack	MainBattle	1-032 X 1-008	_A	300	300	N903_A12
13-Dec-89 00:47:31	13-Dec-89 03:11:10	9003M0	61	Hasty Attack	Movement	1-032 X 1-008	_A	1200	1200	N903_A13
13-Dec-89 03:23:02	13-Dec-89 04:49:11	9003M0	62	Hasty Attack	Movement	1-032 X 1-008	_A	1200	1200	N903_A13
13-Dec-89 05:19:11	13-Dec-89 05:30:00	9003M0	63	Hasty Attack	Movement	1-032 X 1-008	_A	1200	1200	N903_A13
13-Dec-89 05:30:01	13-Dec-89 10:05:00	9003M0	63	Hasty Attack	MainBattle	1-032 X 1-008	_A	300	300	N903_A13

1990 Mission Databases - Use Ingres 6 To Access

mstart	mend	mhisto	msegme	mtype	msubtype	morg	mtf	airpl	gndpl	mdbname
9004										
12-Jan-90 22:35:01	13-Jan-90 01:00:00	9004A0	13	Defend	Movement	4-037 X 2-016	A_	600	600	N904A_13
13-Jan-90 01:00:01	13-Jan-90 06:00:26	9004A0	13	Defend	Ctr-Recon	4-037 X 2-016	A_	900	900	N904A_13
13-Jan-90 06:53:54	13-Jan-90 08:00:00	9004A0	14	Defend	Ctr-Recon	4-037 X 2-016	A_	900	900	N904A_13
13-Jan-90 08:00:01	13-Jan-90 09:51:34	9004A0	14	Defend	MainBattle	4-037 X 2-016	A_	300	300	N904A_13
13-Jan-90 10:03:50	13-Jan-90 10:49:00	9004A0	15	Defend	MainBattle	4-037 X 2-016	A_	300	300	N904A_13
14-Jan-90 06:30:00	14-Jan-90 09:00:00	9004A0	18	Movement to Contact	MainBattle	4-037 X 2-016	A_	300	300	N904A_14
16-Jan-90 06:00:00	16-Jan-90 07:00:00	9004A0	26	Deliberate Attack	Movement	4-037 X 2-016	A_	600	600	N904A_16
16-Jan-90 07:00:01	16-Jan-90 08:05:00	9004A0	26	Deliberate Attack	MainBattle	4-037 X 2-016	A_	300	300	N904A_16
17-Jan-90 18:30:00	17-Jan-90 20:21:22	9004A0	30	Defend	Ctr-Recon	4-037 X 2-016	A_	1200	1200	N904A_18
17-Jan-90 21:40:17	18-Jan-90 03:55:44	9004A0	31	Defend	Ctr-Recon	4-037 X 2-016	A_	1200	1200	N904A_18
18-Jan-90 03:55:45	18-Jan-90 06:30:00	9004A0	32	Defend	Ctr-Recon	4-037 X 2-016	A_	1200	1200	N904A_18
18-Jan-90 06:30:01	18-Jan-90 08:42:00	9004A0	32	Defend	MainBattle	4-037 X 2-016	A_	300	300	N904A_18
20-Jan-90 06:00:00	20-Jan-90 07:00:00	9004A0	40	Deliberate Attack	Movement	4-037 X 2-016	A_	600	600	N904A_20
20-Jan-90 07:00:01	20-Jan-90 09:30:00	9004A0	40	Deliberate Attack	MainBattle	4-037 X 2-016	A_	300	300	N904A_20
20-Jan-90 17:00:00	20-Jan-90 17:57:09	9004A0	42	Deliberate Attack	Recon	4-037 X 2-016	A_	900	900	N904A_21
20-Jan-90 19:08:24	20-Jan-90 20:27:32	9004A0	43	Deliberate Attack	Recon	4-037 X 2-016	A_	900	900	N904A_21
20-Jan-90 21:27:52	20-Jan-90 21:36:38	9004A0	44	Deliberate Attack	Recon	4-037 X 2-016	A_	900	900	N904A_21
20-Jan-90 23:49:58	21-Jan-90 05:19:17	9004A0	45	Deliberate Attack	Recon	4-037 X 2-016	A_	900	900	N904A_21
21-Jan-90 05:57:40	21-Jan-90 07:00:00	9004A0	46	Deliberate Attack	Recon	4-037 X 2-016	A_	900	900	N904A_21
21-Jan-90 07:00:01	21-Jan-90 09:00:00	9004A0	46	Deliberate Attack	MainBattle	4-037 X 2-016	A_	300	300	N904A_21
08-Jan-90 06:40:46	08-Jan-90 07:45:00	9004M0	5	Counterattack	Movement	2-016 X 4-037	M_	600	600	N904_M08
08-Jan-90 07:45:01	08-Jan-90 09:35:00	9004M0	5	Counterattack	MainBattle	2-016 X 4-037	M_	300	300	N904_M08
12-Jan-90 05:30:01	12-Jan-90 06:45:00	9004M0	8	Deliberate Attack	Movement	2-016 X 4-037	M_	600	600	N904_M12
12-Jan-90 06:45:01	12-Jan-90 09:00:00	9004M0	8	Deliberate Attack	MainBattle	2-016 X 4-037	M_	300	300	N904_M12
12-Jan-90 19:50:55	12-Jan-90 22:20:27	9004M0	11	Counterattack	Ctr-Recon	2-016 X 4-037	M_	900	900	N904_M13
12-Jan-90 22:20:28	23-Jan-90 23:00:00	9004M0	12	Counterattack	Ctr-Recon	2-016 X 4-037	M_	900	900	N904_M13
12-Jan-90 23:00:01	13-Jan-90 02:00:00	9004M0	12	Counterattack	Movement	2-016 X 4-037	M_	600	600	N904_M13
13-Jan-90 02:00:01	13-Jan-90 03:18:13	9004M0	12	Counterattack	Movement	2-016 X 4-037	M_	900	900	N904_M13
13-Jan-90 05:25:29	13-Jan-90 08:45:00	9004M0	13	Counterattack	Movement	2-016 X 4-037	M_	900	900	N904_M13
13-Jan-90 08:45:01	13-Jan-90 09:58:53	9004M0	13	Counterattack	MainBattle	2-016 X 4-037	M_	300	300	N904_M13
13-Jan-90 10:11:08	13-Jan-90 10:47:00	9004M0	14	Counterattack	MainBattle	2-016 X 4-037	M_	300	300	N904_M13
20-Jan-90 03:45:00	20-Jan-90 04:15:00	9004M0	40	Deliberate Attack	Movement	2-016 X 4-037	M_	180	180	N904_M20
20-Jan-90 04:15:01	20-Jan-90 05:51:27	9004M0	40	Deliberate Attack	Movement	2-016 X 4-037	M_	900	900	N904_M20
20-Jan-90 05:51:28	20-Jan-90 08:00:00	9004M0	41	Deliberate Attack	Movement	2-016 X 4-037	M_	900	900	N904_M20
20-Jan-90 08:00:01	20-Jan-90 10:00:00	9004M0	41	Deliberate Attack	MainBattle	2-016 X 4-037	M_	300	300	N904_M20
21-Jan-90 06:00:00	21-Jan-90 09:00:00	9004M0	44	Deliberate Attack	MainBattle	2-016 X 4-037	M_	300	300	N904_M21

9005

mstart	mend	mhisto	msegme	mtype	msubtype	morg	meubtype	mtf	airpl	grndpl	mdbname
01-Feb-90 05:47:20	01-Feb-90 07:30:00	9005A0	4	Movement to Contact	Ctr-Recon	3-047 X 3D BDE	I_	1200	1200	N905I_01
01-Feb-90 07:30:01	01-Feb-90 08:50:00	9005A0	4	Movement to Contact	MainBattle	3-047 X 3D BDE	I_	300	300	N905I_01
03-Feb-90 02:16:18	03-Feb-90 05:56:48	9005A0	13	Defend	Ctr-Recon	3-047 X 3D BDE	I_	1800	1800	N905I_03
03-Feb-90 05:56:49	03-Feb-90 06:00:00	9005A0	14	Defend	Ctr-Recon	3-047 X 3D BDE	I_	1800	1800	N905I_03
03-Feb-90 06:00:01	03-Feb-90 09:00:00	9005A0	14	Defend	MainBattle	3-047 X 3D BDE	I_	300	300	N905I_03
04-Feb-90 17:28:46	04-Feb-90 22:27:41	9005A0	23	Hasty Defend	Movement	3-047 X 3D BDE	I_	1200	1200	N905I_05
04-Feb-90 22:27:41	05-Feb-90 05:08:32	9005A0	24	Hasty Defend	Movement	3-047 X 3D BDE	I_	1200	1200	N905I_05
05-Feb-90 05:08:33	05-Feb-90 06:00:00	9005A0	25	Hasty Defend	Movement	3-047 X 3D BDE	I_	1200	1200	N905I_05
05-Feb-90 06:01:00	05-Feb-90 08:18:00	9005A0	25	Hasty Defend	MainBattle	3-047 X 3D BDE	I_	300	300	N905I_05
11-Feb-90 15:30:00	11-Feb-90 16:49:33	9005A0	38	Defend	Ctr-Recon	3-047 X 3D BDE	I_	900	900	N905I_12
11-Feb-90 16:49:34	11-Feb-90 22:19:57	9005A0	39	Defend	Ctr-Recon	3-047 X 3D BDE	I_	900	900	N905I_12
11-Feb-90 22:19:58	12-Feb-90 02:36:30	9005A0	40	Defend	Ctr-Recon	3-047 X 3D BDE	I_	900	900	N905I_12
12-Feb-90 02:36:31	12-Feb-90 05:31:02	9005A0	41	Defend	Ctr-Recon	3-047 X 3D BDE	I_	900	900	N905I_12
12-Feb-90 05:51:05	12-Feb-90 08:15:00	9005A0	42	Defend	MainBattle	3-047 X 3D BDE	I_	300	300	N905I_12
13-Feb-90 05:00:00	13-Feb-90 08:45:00	9005A0	47	Movement to Contact	MainBattle	3-047 X 3D BDE	I_	300	300	N905I_13
05-Feb-90 18:41:09	06-Feb-90 02:58:48	9005M0	19	Defend	Ctr-Recon	2-060 X BDE TO	_N	1200	1200	N905_N06
06-Feb-90 10:55:42	06-Feb-90 14:00:00	9005M0	22	Defend	MainBattle	2-060 X BDE TO	_N	300	300	N905_N06
08-Feb-90 07:00:00	08-Feb-90 09:00:00	9005M0	29	Movement to Contact	Movement	2-060 X BDE TO	_N	300	300	N905_N08
09-Feb-90 10:55:23	09-Feb-90 18:25:48	9005M0	32	Counterattack	MainBattle	2-060 X BDE TO	_N	300	300	N905_N09
09-Feb-90 18:25:49	09-Feb-90 22:50:00	9005M0	33	Counterattack	MainBattle	2-060 X BDE TO	_N	300	300	N905_N09
12-Feb-90 01:05:47	12-Feb-90 03:06:33	9005M0	38	Defend	Ctr-Recon	2-060 X BDE TO	_N	900	900	N905_N12
12-Feb-90 05:00:16	12-Feb-90 06:30:00	9005M0	39	Defend	Ctr-Recon	2-060 X BDE TO	_N	900	900	N905_N12
12-Feb-90 06:31:00	12-Feb-90 09:12:00	9005M0	39	Defend	MainBattle	2-060 X BDE TO	_N	300	300	N905_N12
12-Feb-90 22:25:41	13-Feb-90 03:41:04	9005M0	42	Movement to Contact	Recon	2-060 X BDE TO	_N	1200	1200	N905_N13
13-Feb-90 05:05:01	13-Feb-90 05:30:00	9005M0	43	Movement to Contact	Recon	2-060 X BDE TO	_N	1200	1200	N905_N13
13-Feb-90 05:30:01	13-Feb-90 09:00:00	9005M0	43	Movement to Contact	MainBattle	2-060 X BDE TO	_N	600	600	N905_N13

mstart	mend	mhisto	msegme	mtype	msubtype	morg	mtf	alrpl	grndpl	mdbname
9006										
02-Mar-90 01:12:22	02-Mar-90 05:28:34	9006A0	25	Defend	Ctr-Recon	1-018 X 197TH	E_	900	900	N906E_02
02-Mar-90 05:29:00	02-Mar-90 06:00:00	9006A0	26	Defend	Ctr-Recon	1-018 X 197TH	E_	900	900	N906E_02
02-Mar-90 06:01:00	02-Mar-90 07:25:00	9006A0	26	Defend	MainBattle	1-018 X 197TH	E_	300	300	N906E_02
03-Mar-90 06:03:19	03-Mar-90 09:26:19	9006A0	33	Deliberate Attack	Recon	1-018 X 197TH	E_	1200	1200	N906E_04
03-Mar-90 12:39:52	03-Mar-90 13:20:41	9006A0	34	Deliberate Attack	Recon	1-018 X 197TH	E_	1200	1200	N906E_04
03-Mar-90 17:41:38	03-Mar-90 18:29:59	9006A0	35	Deliberate Attack	Recon	1-018 X 197TH	E_	1200	1200	N906E_04
03-Mar-90 21:16:06	03-Mar-90 21:51:56	9006A0	36	Deliberate Attack	Recon	1-018 X 197TH	E_	1200	1200	N906E_04
04-Mar-90 01:04:08	04-Mar-90 01:24:34	9006A0	37	Deliberate Attack	Recon	1-018 X 197TH	E_	1200	1200	N906E_04
04-Mar-90 02:53:01	04-Mar-90 03:25:18	9006A0	38	Deliberate Attack	Recon	1-018 X 197TH	E_	1200	1200	N906E_04
04-Mar-90 04:45:21	04-Mar-90 04:52:39	9006A0	39	Deliberate Attack	Recon	1-018 X 197TH	E_	1200	1200	N906E_04
04-Mar-90 05:49:12	04-Mar-90 06:00:00	9006A0	40	Deliberate Attack	Recon	1-018 X 197TH	E_	1200	1200	N906E_04
04-Mar-90 06:01:00	04-Mar-90 08:50:00	9006A0	40	Deliberate Attack	MainBattle	1-018 X 197TH	E_	300	300	N906E_04
05-Mar-90 20:16:18	06-Mar-90 00:30:19	9006A0	48	Defend	Ctr-Recon	1-018 X 197TH	E_	900	900	N906E_06
06-Mar-90 00:31:00	06-Mar-90 03:14:03	9006A0	49	Defend	Ctr-Recon	1-018 X 197TH	E_	900	900	N906E_06
06-Mar-90 04:19:59	06-Mar-90 05:30:00	9006A0	50	Defend	Ctr-Recon	1-018 X 197TH	E_	900	900	N906E_06
06-Mar-90 05:31:00	06-Mar-90 07:45:00	9006A0	50	Defend	MainBattle	1-018 X 197TH	E_	300	300	N906E_06
06-Mar-90 23:10:40	07-Mar-90 01:15:37	9006A0	52	Hasty Attack	Recon	1-018 X 197TH	E_	900	900	N906E_07
07-Mar-90 02:50:36	07-Mar-90 03:07:37	9006A0	53	Hasty Attack	Recon	1-018 X 197TH	E_	900	900	N906E_07
07-Mar-90 04:13:26	07-Mar-90 05:00:00	9006A0	54	Hasty Attack	Recon	1-018 X 197TH	E_	900	900	N906E_07
07-Mar-90 05:01:11	07-Mar-90 08:00:00	9006A0	54	Hasty Attack	Movement	1-018 X 197TH	E_	600	600	N906E_07
07-Mar-90 08:00:00	07-Mar-90 10:08:00	9006A0	54	Hasty Attack	MainBattle	1-018 X 197TH	E_	300	300	N906E_07
08-Mar-90 22:00:00	09-Mar-90 23:30:00	9006A0	61	Deliberate Attack	Movement	1-018 X 197TH	E_	600	600	N906E_08
09-Mar-90 23:31:00	09-Mar-90 03:47:49	9006A0	61	Deliberate Attack	MainBattle	1-018 X 197TH	E_	600	600	N906E_08
09-Mar-90 03:48:00	09-Mar-90 04:00:00	9006A0	62	Deliberate Attack	MainBattle	1-018 X 197TH	E_	600	600	N906E_08
01-Mar-90 05:30:00	01-Mar-90 08:30:00	9006M0	20	Hasty Attack	MainBattle	2-018 X 197TH	_M	300	300	N906_M01
08-Mar-90 22:30:00	09-Mar-90 01:00:00	9006M0	52	Deliberate Attack	Movement	2-018 X 197TH	_M	600	600	N906_M08
09-Mar-90 01:01:00	09-Mar-90 04:00:00	9006M0	52	Deliberate Attack	MainBattle	2-018 X 197TH	_M	600	600	N906_M08
10-Mar-90 04:05:01	10-Mar-90 07:00:00	9006M0	56	Deliberate Attack	Movement	2-018 X 197TH	_M	600	600	N906_M10
10-Mar-90 07:01:00	10-Mar-90 08:58:00	9006M0	56	Deliberate Attack	MainBattle	2-018 X 197TH	_M	300	300	N906_M10
26-Feb-90 03:30:53	26-Feb-90 05:45:14	9006M0	6	Deliberate Attack	Ctr-Recon	2-018 X 197TH	_M	900	900	N906_M26
26-Feb-90 05:46:00	26-Feb-90 09:00:00	9006M0	7	Deliberate Attack	Movement	2-018 X 197TH	_M	600	600	N906_M26
26-Feb-90 09:01:00	26-Feb-90 11:17:00	9006M0	7	Deliberate Attack	MainBattle	2-018 X 197TH	_M	300	300	N906_M26
28-Feb-90 05:05:15	28-Feb-90 06:00:00	9006M0	15	Defend	Ctr-Recon	2-018 X 197TH	_M	1800	1800	N906_M28
28-Feb-90 06:01:00	28-Feb-90 07:30:00	9006M0	15	Defend	MainBattle	2-018 X 197TH	_M	300	300	N906_M28

1990 Mission Databases - Use Ingres 6 To Access

mstart	mend	mhisto	msegme	mtype	msubtype	morg	mtf	alrpl	grdpl	mdbname
9009										
08-May-90 06:01:21	08-May-90 08:30:00	9009A0	3	Hasty Attack	MainBattle	3-068 X 2D BDE	A_	300	300	N909A_08
10-May-90 04:25:50	10-May-90 05:26:46	9009A0	10	Defend	Ctr-Recon	3-068 X 2D BDE	A_	600	600	N909A_10
10-May-90 05:36:29	10-May-90 07:12:28	9009A0	11	Defend	MainBattle	3-068 X 2D BDE	A_	300	300	N909A_10
10-May-90 07:26:51	10-May-90 08:50:00	9009A0	12	Defend	MainBattle	3-068 X 2D BDE	A_	300	300	N909A_10
20-May-90 06:11:50	20-May-90 07:00:00	9009A0	49	Deliberate Attack	Movement	3-068 X 2D BDE	A_	600	600	N909A_20
20-May-90 07:00:01	20-May-90 10:00:00	9009A0	49	Deliberate Attack	MainBattle	3-068 X 2D BDE	A_	300	300	N909A_20
21-May-90 22:15:00	21-May-90 02:40:47	9009A0	51	Deliberate Attack	Recon	3-068 X 2D BDE	A_	900	900	N909A_21
21-May-90 02:40:48	21-May-90 05:30:34	9009A0	52	Deliberate Attack	Recon	3-068 X 2D BDE	A_	900	900	N909A_21
21-May-90 05:30:35	21-May-90 05:50:00	9009A0	53	Deliberate Attack	Recon	3-068 X 2D BDE	A_	900	900	N909A_21
21-May-90 05:50:01	21-May-90 07:00:00	9009A0	53	Deliberate Attack	Movement	3-068 X 2D BDE	A_	600	600	N909A_21
21-May-90 07:00:01	21-May-90 09:27:00	9009A0	53	Deliberate Attack	MainBattle	3-068 X 2D BDE	A_	300	300	N909A_21
13-May-90 05:15:00	13-May-90 07:00:00	9009M0	23	Movement to Contact	MainBattle	2-012 X 2D BDE	DG	60	60	N909DG13
14-May-90 04:55:32	14-May-90 07:00:00	9009M0	26	Movement to Contact	MainBattle	2-012 X 2D BDE	DG	60	60	N909DG14
18-May-90 04:05:58	18-May-90 06:10:00	9009M0	46	Defend	Ctr-Recon	2-012 X 2D BDE	L_	900	900	N909_L07
18-May-90 06:01:00	18-May-90 08:00:00	9009M0	46	Defend	Movement	2-012 X 2D BDE	L_	600	600	N909_L07
18-May-90 08:01:00	18-May-90 12:13:31	9009M0	46	Defend	MainBattle	2-012 X 2D BDE	L_	300	300	N909_L07
20-May-90 06:06:36	20-May-90 10:00:00	9009M0	51	Deliberate Attack	MainBattle	2-012 X 2D BDE	L_	300	300	N909_L20
21-May-90 01:30:00	21-May-90 02:55:26	9009M0	54	Deliberate Attack	MainBattle	2-012 X 2D BDE	L_	300	300	N909_L21
21-May-90 03:30:24	21-May-90 09:30:00	9009M0	55	Deliberate Attack	MainBattle	2-012 X 2D BDE	L_	300	300	N909_L21
13-May-90 04:41:19	13-May-90 07:45:00	9009M0	23	Movement to Contact	MainBattle	2-012 X 2D BDE	M_	300	300	N909_M13
14-May-90 04:55:32	14-May-90 07:00:00	9009M0	26	Movement to Contact	MainBattle	2-012 X 2D BDE	M_	300	300	N909_M14
16-May-90 05:20:15	16-May-90 07:30:00	9009M0	37	Defend	Ctr-Recon	2-012 X 2D BDE	M_	900	900	N909_M16
16-May-90 07:31:00	16-May-90 09:57:53	9009M0	37	Defend	MainBattle	2-012 X 2D BDE	M_	300	300	N909_M16
17-May-90 03:00:00	17-May-90 03:31:17	9009M0	42	Deliberate Attack	Movement	2-012 X 2D BDE	M_	600	600	N909_M17
17-May-90 05:00:12	17-May-90 06:35:00	9009M0	43	Deliberate Attack	Movement	2-012 X 2D BDE	M_	600	600	N909_M17
17-May-90 06:36:00	17-May-90 08:35:00	9009M0	43	Deliberate Attack	MainBattle	2-012 X 2D BDE	M_	300	300	N909_M17
18-May-90 04:05:58	18-May-90 06:00:00	9009M0	46	Movement to Contact	Recon	2-012 X 2D BDE	M_	900	900	N909_M18
18-May-90 06:01:00	18-May-90 09:00:00	9009M0	46	Movement to Contact	MainBattle	2-012 X 2D BDE	M_	300	300	N909_M18
20-May-90 22:33:07	21-May-90 00:58:44	9009M0	53	Deliberate Attack	Movement	2-012 X 2D BDE	M_	600	600	N909_M21
21-May-90 01:59:01	21-May-90 02:55:26	9009M0	54	Deliberate Attack	Movement	2-012 X 2D BDE	M_	600	600	N909_M21
21-May-90 03:30:24	21-May-90 06:30:00	9009M0	55	Deliberate Attack	Movement	2-012 X 2D BDE	M_	600	600	N909_M21
21-May-90 06:31:00	21-May-90 09:30:00	9009M0	55	Deliberate Attack	MainBattle	2-012 X 2D BDE	M_	300	300	N909_M21

APPENDIX A

MISSION DATABASE TABLE STRUCTURE

Each Mission Database is an INGRES relational database containing 18 tables. This appendix describes the content of each table in the Mission Database. It includes the explicit layout, element by element, for each of the tables.

MISSION IDENTIFICATION TABLE (MID)

The Mission Identification Table provides all information required to completely identify and categorize a mission segment.

Element Name	Element Description	Units
START_TIME	Mission start date and time	20 Char
END_TIME	Mission end date and time	20 Char
HISTORY	History Name	10 Char
SEGMENT	Segment Number	1 Integer
MTYPE	Mission Type	20 Char
MSUBTYPE *	Mission sub-type	10 Char
ORG	Unit ID	20 Char
TF	Task Force type	2 Char
AIRPL *	Air Player P/L logging rate	2 Integer
GNDPL *	Ground Player P/L logging rate	2 Integer
DBNAME *	Database name	10 Char

* These elements were added to the MID table beginning with 9001 mission databases.
  Mission sub-type includes Recon, Ctr-Recon, Movement, Maneuver, and MainBattle.

```
>range of m is mid
>retrieve (m.all)
```

Missions built from 8601 to 8914 have the following MID table format:

start_time	end_time	history	segmen	mtype	org	tf
05-Feb-88 03:10:26	05-Feb-88-10:26:02	8805M1	5	DEF SEC	2-005 X 2-050	M

Missions built since 9001 have the following MID table format:

start_time	end_time	history	seg	mtype	history	msubtype	org	tf	airpl	gndpl	dbname
28-Feb-90 05:05:15	28-Feb-90 06:00:00	9006M0		15	Defend	Ctr-Recon	2-018 X 197TH	_M	1800	1800	N906_M28
28-Feb-90 06:01:00	28-Feb-90 07:30:00	9006M0		15	Defend	MainBattle	2-018 X 197TH	_M	300	300	N906_M28

MISSION IDENTIFICATION TABLE (MID)

The Player State Initialization Table describes the player list at the beginning of the mission segment. It includes all players, Opfor, Bluefor, and White.

```
Element     Element
Name        Description                                    Units
-------     --------------------------------------         -------
PID         Player identification (Bumper number)          3  Char
LPN *       Logical Player Number                          2  Integer
SIDE        B(lue), O(pfor), or W(hite)                    1  Char
INST        I(nstrumented) or N(ot instrumented)           1  Char
ACTIVE      0 - undetermined, 1 - Active,
            2 - Not active                                 1  Integer
PTYPE       Player Type Code  (See PVWT Table A-7)         1  Integer
ORG         Next higher Line Unit                          20 Char
TRACK       T(racked) or U(ntracked) by RDMS               1  Char
PSTAT *     Player Status Code                             1  Integer
```

* LPN (Logical Player Number) is a unique index used by the realtime system at the NTC.
* The player status codes (PSTAT) are:

```
1. Operational                    5. Administrative Kill
2. Combat Loss                     6. Mechanically Down
3. OC Gun Kill                     7. Mobility Kill
4. Accidental Kill
```

```
>range of p is psit
>retrieve (p.all) where p.side != "W" /* don't look at controllers */
```

pid	lpn	side	inst	active	ptype	org	track	pstat
HQ1	32	O	I	0	3	TOC	T	1
HQ2	33	O	I	0	1	TOC	T	1
HQ3	34	O	I	0	3	TOC	T	1
HQ5	35	O	I	0	3	TOC	U	1
HQ6	36	O	I	0	3	TOC	U	1

PLAYER STATE UPDATE TABLE (PSUT)

The Player State Update table tracks changes to all players throughout the duration of the mission segment. Fields that are subject to update are SIDE, INST, PTYPE, ORG, TRACK and PSTAT.

Element Name	Element Description	Units
TIME	Date and Time of Update	20 Char
PID	Player identification (Bumper number)	3 Char
LPN *	Logical Player Number	2 Integer
SIDE	B(lue), O(pfor), or W(hite)	1 Char
INST	I(nstrumented) or N(ot instrumented)	1 Char
PTYPE	Player Type Code (See PVWT Table p. A-7)	1 Integer
ORG	Next higher Line Unit	20 Char
TRACK	T(racked) or U(ntracked) by RDMS	1 Char
PSTAT *	Player Status Code	1 Integer

* LPN (Logical Player Number) is a unique index used by the realtime system at the NTC.
* The player status codes (PSTAT) are:

1. Operational
2. Combat Loss
3. OC Gun Kill
4. Accidental Kill

5. Administrative Kill
6. Mechanically Down
7. Mobility Kill

```
>range of p is psut
>retrieve (p.all)
```

time	pid	lpn	side	inst	ptype	org	track	pstat
05 Feb 88 03:11:25	DMT	356	B	I	2	CP/D/D/2-005	T	1
05 Feb 88 03:11:27	DEV	303	B	I	2	CBT/2-005	U	5
05 Feb 88 03:12:27	21H	4	W	I	2	No unit	U	9
05 Feb 88 03:12:41	433	128	O	I	3	3/3-001	T	2
05 Feb 88 03:13:40	21S	13	W	I	2	No unit	T	9
05 Feb 88 03:13:42	117	44	O	I	3	1/1-001	T	2
05 Feb 88 03:14:49	216	67	O	I	3	1/2-001	T	1

UNIT STATE INITIALIZATION TABLE (USIT)

The Unit State Initialization Table describes Opfor and Bluefor units at the beginning of the mission segment.

Element Name	Element Description	Units
UNIT	Unit Name	15 Char
LINU	Next Higher Line Unit	15 Char
STAU	Next Higher Statistical Unit	15 Char
UTYPE	Unit Type Code (See Page A-21)	1 Integer
SIDE	Side Code O(pfor) or B(luefor)	1 Char
ECHELON*	Echelon	3 Char

* Echelon will be Plt, Co, Bn, Bde/ Div, or Reg

```
>range of u is usit
>retrieve (u.all)
```

unit	linu	stau	utype	side	echelo
001	No unit	No unit	5	O	Reg
1-001	001	001	1	O	Bn
1/1-001	1-001	1-001	1	O	Co
2/1-001	1-001	1-001	2	O	Co
3/1-001	1-001	1-001	3	O	Co
2-001	001	001	2	O	Bn
1/2-001	2-001	2-001	1	O	Co
2/2-001	2-001	2-001	2	O	Co
3/2-001	2-001	2-001	3	O	Co
3-001	001	001	3	O	Bn
1/3-001	3-001	3-001	1	O	Co

UNIT TYPE TABLE (UTT)

The Unit Type Table contains information relating to unit organizations.

Element Name	Element Description	Units
UTYPE	Unit Type Code (See Page A-21)	1 Integer
SIDE	O(pfor) or B(luefor)	1 Char
ECHELON *	Echelon	3 Char
DESC	Unit Description	20 Char

* Echelon will be Plt, Co, Bn, Bde/ Div, or Reg

>range of u is utt
>retrieve (u.all)

utype	side	echelo	desc
1	O	Plt	1st Platoon
2	O	Plt	2nd Platoon
3	O	Plt	3rd Platoon
4	O	Plt	4th Platoon
5	O	Plt	Anti-Tank
6	O	Plt	Engineer
7	O	Plt	Chemical
8	O	Plt	Armored Cavalry
9	O	Plt	ABN Infantry
10	O	Plt	Army Aviation
11	O	Plt	Air Cavalry

Unit State Update Table (USUT)

The Unit State Update Table tracks changes to all units throughout the duration of the mission segment. Changes to a unit are infrequent, so this table usually has no entries in it.

Element Name	Element Description	Units
TIME	Date and Time of Update	20 Char
UNIT	Unit Name	20 Char
STAU	Next Higher Statistical Unit	20 Char
UTYPE	Unit Type Code (See Page A-21)	1 Integer

```
>range of u is usut
>retrieve (u.all)
```

time	unit	stau	utype

End of Request - 0 Row

PLAYER/ VEHICLE/ WEAPON CODE TABLE (PVWT)

The Player/Vehicle/Weapon Code Table defines a unique code for each weapon present on the battlefield. The codes allow correlation of MILES codes, vehicle types, and weapons. The PVWT is static; it doesn't change from database to database.

Element Name	Element Description	Units
SIDE	O(pfor) or B(luefor)	1 Char
PTYPE	Player Type Code	1 Integer
VEHICLE	Vehicle Description	15 Char
MILES	MILES Weapon Code	1 Integer
WEAPON	Weapon description	15 Char
IAMMO	Initial Ammunition Load (not used)	2 Integer

1> print pvwt

Table listing on next page.

Left section (side B):

side	ptype	vehicle	miles	weapon	iammo
B	0	Undefined		0	Unknown	0
B	1	M60 A1/A3 Tank	12	105mm main gun	0
B	1	Abrams	16	120mm main gun	0
B	1	M60 A1/A3 Tank	27	Coax	0
B	1	M60 A1/A3 Tank	28	105mm (miss)	0
B	1	M60 A1/A3 Tank	29	Coax (miss)	0
B	2	APC	24	M2 Machine Gun	0
B	2	APC	29	M2 (miss)	0
B	3	APC	7	TOW	0
B	3	APC	31	TOW (miss)	0
B	4	Manpack		0	non weapon	0
B	5	Manpack	15	Viper	0
B	5	Manpack	28	Viper (miss)	0
B	6	Manpack	8	Dragon	0
B	7	Manpack	27	M-16 rifle	0
B	7	Manpack	29	M-16 (miss)	0
B	8	Manpack	27	M60 machine gun	0
B	8	Manpack	29	M60 (miss)	0
B	9	Manpad	26	Stinger	0
B	10	Vulcan	23	20mm	0
B	10	Vulcan	29	20mm (miss)	0
B	11	Radar (GSR)		0	non weapon	0
B	12	Jammer		0	non weapon	0
B	13	Collector		0	non weapon	0
B	14	Truck		0	non weapon	0
B	15	DIVAD (M730)	25	Chaparral	0
B	15	DIVAD (M730)	28	Chaparral (miss)	0
B	16	Mortar	4	4.2 inch	0
B	17	Mortar	4	81mm	0
B	18	SP Gun	0	175mm	0
B	19	SP Howitzer	18	8 inch	0
B	20	SP Howitzer	18	105mm	0
B	21	SP Howitzer	18	155mm	0
B	22	AH 1S (Heli.)	7	TOW	0
B	22	AH 1S (Heli.)	14	2.75" Rockets	0
B	22	AH 1S (Heli.)	23	20mm	0
B	22	AH 1S (Heli.)	29	2.75"/20mm miss	0
B	23	Fighter	23	30mm	0
B	23	Fighter	29	30mm (miss)	0
B	24	Bomber	20	Rockeye (CB)	0
B	25	Fighter/Bomber	0	Uninstrumented	0
B	26	Reconnaissance		0	non weapon	0
B	29	Bradley	7	TOW	0
B	29	Bradley	21	25mm	0

Right section (sides O, W):

side	ptype	vehicle	miles	weapon	iammo
O	0	Undefined		0	Unknown	0
O	1	Tank (T-72)	10	125mm main gun	0
O	1	Tank (T-72)	27	M60 Machine gun	0
O	1	Tank (T-72)	28	125mm (miss)	0
O	1	Tank (T-72)	29	M60 (miss)	0
O	2	BMP		0	non weapon	0
O	3	BMP		3	Sagger	0
O	3	BMP	14	PKT (73mm)	0
O	3	BMP	28	PKT (73mm)	0
O	4	BMP		3	Sagger	0
O	5	BRDM		0	non weapon	0
O	6	BRDM		8	Sagger	0
O	7	ZSU-23-4		6	Radar Mode	0
O	7	ZSU-23-4	22	Visual Mode	0
O	7	ZSU-23-4	29	Weapon miss	0
O	8	SP Howitzer	18	122mm	0
O	8	SP Howitzer	28	122mm	0
O	9	Gun Howitzer	13	152mm	0
O	9	Gun Howitzer	28	152mm (miss)	0
O	10	Howitzer	13	152mm	0
O	10	Howitzer	28	152mm (miss)	0
O	11	Manpack		0	non weapon	0
O	12	Manpack		3	Sagger	0
O	13	Manpack	27	AK (M-16)	0
O	13	Manpack	29	AK (M-16) miss	0
O	14	Manpack	27	PKT (M-60)	0
O	14	Manpack	29	PKT (M-60)	0
O	15	Manpack	26	SA7	0
O	16	Jammer		0	non weapon	0
O	17	Collector		0	non weapon	0
O	18	Truck		0	non weapon	0
O	19	ADA		0	Uninstrumented	0
O	20	SA9		0	Uninstrumented	0
O	21	Mortar	16	120mm	0
O	22	Mortar	0	180mm	0
O	23	HIND-D	7	AT-6	0
O	23	HIND-D	14	57mm Rocket	0
O	23	HIND-D	23	30mm	0
O	24	Fighter	0	Uninstrumented	0
O	25	Bomber	0	Uninstrumented	0
O	26	Fighter/Bomber	0	Uninstrumented	0
O	27	Reconnaissance		0	non weapon	0
W	0	Video		0	non weapon	0
W	1	Controller		0	Controller gun	0
W	2	Firer Marker		0	non weapon	0

PLAYER/VEHICLE/WEAPON CODE TABLE (PVWT)

FIRING EVENT TABLE (FET)

The Firing Event Table will maintain a time-ordered record of all legitimate firings recorded by the RDMS. The last column, ammo, is only updated when RDMS data is used to enhance the data, and is otherwise zero.

Element Name	Element Description	Units
TIME	Date and Time of Fire Event	20 Char
PID	Player ID (Bumper Number)	3 Char
LPN *	Logical Player Number	2 Integer
MILES	MILES Weapon Code (See PVWT A-7)	1 Integer
X	Position location X coordinate	4 integer
Y	Position location Y coordinate	4 integer
IAMMO	Ammunition Remaining	4 Integer

* LPN (Logical Player Number) is a unique index used by the realtime system at the NTC.

```
1> print fet
```

time	pid	lpn	miles	x	y	ammo
30-Nov-89 07:33:32	C66	180	27	22075	123888	0
30-Nov-89 07:34:09	SC1	310	21	35538	118138	0
30-Nov-89 07:34:17	SC1	310	21	35538	118138	0
30-Nov-89 07:34:23	SC1	310	21	35538	118138	0
30-Nov-89 07:34:25	SC1	310	21	35538	118138	0
30-Nov-89 07:34:53	23B	363	21	36650	115175	0
30-Nov-89 07:36:27	23B	363	21	36650	115175	0
30-Nov-89 07:36:29	23B	363	21	36650	115175	0
30-Nov-89 07:38:07	23B	363	21	34525	117613	0
30-Nov-89 07:38:09	23B	363	21	34525	117613	0
30-Nov-89 07:38:19	SC6	315	21	28838	116350	0
30-Nov-89 07:38:59	23B	363	21	34525	117613	0
30-Nov-89 07:39:13	SC6	315	21	28838	116350	0

PAIRING EVENT TABLE (PET)

The Pairing Event Table maintains a time-ordered record of legitimate pairing events. This table also contains information relating to the firer if the pairing event can be matched with a fire event.

Element Name	Element Description	Units
TIME	Date and Time of Pairing	20 Char
TPID	Target ID (Bumper Number)	3 Char
TLPN	Target LPN	2 Integer
RESULT	N(ear miss), H(it), K(ill)	1 Char
FPID	Firer ID (Bumper Number)	3 Char
FLPN	Firer LPN	2 Integer
MILES	Firer Weapon Type (See PVWT Table A-7)	1 Integer
FRAT	Fratricide Indicator (Y/N)	1 Char
TX	Target position location X coordinate	4 Integer
TY	Target position location Y coordinate	4 Integer
FX	Firer position location X coordinate	4 Integer
FY	Firer position location Y coordinate	4 Integer

```
1> print pet
```

time	tpid	tlpn	result	fpid	flpn	miles	frat	tx	ty	fx	fy	dist
30-Nov-89 07:43:45	60A	339	H			0	N	32238	114550	0	0	0
30-Nov-89 07:43:53	B34	368	H			0	N	32400	118038	0	0	0
30-Nov-89 07:44:18	B34	368	N			0	N	32138	118138	0	0	0
30-Nov-89 07:44:30	D24	394	N			0	N	28450	116638	0	0	0
30-Nov-89 07:46:45	A16	98	N			0	N	21863	124638	0	0	0
30-Nov-89 07:47:45	A65	85	H			0	N	21750	124638	0	0	0
30-Nov-89 07:52:15	23B	363	K	B34	368	12	Y	29213	119988	31150	118463	2465
30-Nov-89 07:54:34	B60	354	K			0	N	29350	120725	0	0	0
30-Nov-89 07:55:59	330	215	N			0	N	22450	124188	0	0	0
30-Nov-89 07:56:32	313	185	H			0	N	22863	124225	0	0	0
30-Nov-89 07:57:12	33A	352	K			0	N	29900	115650	0	0	0
30-Nov-89 07:57:26	B11	357	N			0	N	29275	121950	0	0	0
30-Nov-89 07:57:30	C13	374	H			0	N	36325	115538	0	0	0

The Communication Table maintains a record of all commo events (Key Depressed/Released) for the mission segment.

Element Name	Element Description	Units
TIME	Date and Time of Commo Event	20 Char
PID	Player ID (Bumper Number)	3 Char
LPN *	LPN	2 Integer
NET	Radio Net (1 or 2)	1 Char
Duration	Duration of transmission in MM:SS	5 Char

* LPN (Logical Player Number) is a unique index used by the realtime system at the NTC.

1> print ct

```
+------------------------+----+----+---+------+
|time                    |pid |lpn |net|durati|
+------------------------+----+----+---+------+
| 30-Nov-89 08:04:06     |FD2 |268 |1  |02:22 |
| 30-Nov-89 09:45:37     |B60 |354 |2  |49:38 |
| 30-Nov-89 09:53:41     |SC6 |315 |2  |27:53 |
+------------------------+----+----+---+------+
```

The Ground Player Position Location Table maintains a time-ordered record of Position Location (PL) X and Y coordinates for each instrumented ground player. PL is recorded at an operator-selected interval. PL is logged at realtime (PL = 0) or every 5 minute (PL = 300 seconds), 10 minute (PL = 600 seconds), 15 minute (PL = 900 seconds), or 20 minute (PL = 1800 seconds) intervals.

Element Name	Element Description	Units
TIME	Date and Time of PL	20 Char
PID	Player ID (Bumper Number)	3 Char
LPN *	LPN	2 Integer
X	Position location X coordinate	4 Integer
Y	Position location Y coordinate	4 Integer

* LPN (Logical Player Number) is a unique index used by the realtime system at the NTC.

1> print gplt

time	pid	lpn	x	y
30-Nov-89 07:37:14	21B	1	35413	117700
30-Nov-89 07:37:14	21E	2	32463	114450
30-Nov-89 07:37:14	21G	4	32738	112813
30-Nov-89 07:37:14	21H	5	37975	111825
30-Nov-89 07:37:14	21J	7	28638	102413
30-Nov-89 07:37:14	21L	9	35363	111375
30-Nov-89 07:37:14	21M	10	37900	114050
30-Nov-89 07:37:14	21N	11	34163	113900
30-Nov-89 07:37:14	21P	12	36463	108088
30-Nov-89 07:37:14	21Q	13	33438	117475
30-Nov-89 07:37:14	21S	15	33813	120500
30-Nov-89 07:37:14	21U	17	39488	118725
30-Nov-89 07:37:14	21W	19	35250	116338

AIR PLAYER POSITION LOCATION TABLE (APLT)

The Air Player Position Location Table maintains a time-ordered record of Position Location (PL) X Y, and Z coordinates for each instrumented air player. PL will be recorded at operator-selected intervals. PL is logged at realtime (PL = 0) or every 5 minute (PL = 300 seconds), 10 minute (PL = 600 seconds), 15 minute (PL = 900 seconds), 20 minute (PL = 20 minutes), or 30 minute (PL = 1800 seconds) intervals.

Element Name	Element Description	Units
TIME	Date and Time of PL	20 Char
PID	Player ID (Bumper Number)	3 Char
LPN *	LPN	2 Integer
X	Position location X coordinate	4 Integer
Y	Position location Y coordinate	4 Integer
Z	Position location Y coordinate	4 Integer

* LPN (Logical Player Number) is a unique index used by the realtime system at the NTC.

1> print aplt

time	pid	lpn	x	y	z
30-Nov-89 07:37:14	RA2	23	33150	117388	1662
30-Nov-89 07:37:14	OH1	275	26713	99863	0
30-Nov-89 07:37:14	AH1	279	21225	96625	1537
30-Nov-89 07:37:14	AH2	280	41575	108800	750
30-Nov-89 07:37:14	OV1	281	41550	108888	400
30-Nov-89 07:37:14	OV2	282	21225	96563	0
30-Nov-89 07:37:14	AV1	284	58238	115388	737
30-Nov-89 07:42:14	OH1	275	26713	99863	0
30-Nov-89 07:42:14	AH1	279	21050	96800	700
30-Nov-89 07:42:14	AH2	280	38925	109838	1050
30-Nov-89 07:42:14	OV1	281	35625	108525	550
30-Nov-89 07:42:14	OV2	282	21225	96563	0
30-Nov-89 07:42:14	AV1	284	58225	115388	700

The IFCAS Target Table contains a list of pre-planned indirect fire (IFCAS) targets and their locations.

Element Name	Element Description	Units
TARGET	IFCAS Target Name	5 Char
SIDE	B(lue), O(pfor), or W(hite)	1 Char
TGT_IDX	Target Index	2 Integer
X	Position location X coordinate	4 Integer
Y	Position location Y coordinate	4 Integer

```
>range of i is iftt
>retrieve (i.all)
```

target	side	tgt_id	x	y
055	B	1	52800	98300
056	B	2	53300	97800
057	B	3	45100	106800
058	B	4	44800	107000
	B	5	46200	98700
	B	6	50100	99900
2	B	7	46400	98400
	B	8	54400	104400
3	B	9	54400	100400
	B	10	55300	100800
4	B	11	55300	100800
118	B	12	54800	120000

IFCAS TARGET GROUP TABLE (IFGT)

The IFCAS Target Group Table contains a list of pre-planned IFCAS target groups and their component targets.

Element Name	Element Description	Units
GROUP	IFCAS Target Group Name	3 Char
SIDE	B(lue), O(pfor), or W(hite)	1 Char
TARGET1	IFCAS Target Name #1	2 Integer
TARGET2	IFCAS Target Name #2	2 Integer
TARGET3	IFCAS Target Name #3	2 Integer

o
o
o

(Up to 10 Targets)

1> print ifgt

group	side	target	target	target	target	target	target	target	target	target	target
Y1A	O	10	11	0	0	0	0	0	0	0	0
Y1B	O	12	13	0	0	0	0	0	0	0	0
Y1C	O	14	15	0	0	0	0	0	0	0	0
Y1D	O	16	17	0	0	0	0	0	0	0	0
Y1E	O	18	19	0	0	0	0	0	0	0	0
Y1F	O	20	21	0	0	0	0	0	0	0	0
F6W	O	22	23	0	0	0	0	0	0	0	0
F6Z	O	24	25	0	0	0	0	0	0	0	0
F8	O	26	27	28	0	0	0	0	0	0	0
F8A	O	29	30	31	0	0	0	0	0	0	0
HT	O	32	33	34	0	0	0	0	0	0	0
Y2	O	35	36	37	0	0	0	0	0	0	0
Y2W	O	38	39	0	0	0	0	0	0	0	0

IFCAS TARGET GROUP TABLE (IFGT)

IFCAS MISSIONS FIRED TABLE (IFMF)

The IFCAS Missions Fires Table contains a list of all IFCAS missions fired during this mission segment. The elements present in this table are determined by how the data are specified. For instance, an IFCAS mission can be specified either by using a preplanned mission number or a service request. If a service request is specified, the target location can be given either by using a target group name or target coordinates.

Element Name	Element Description	Units	
TIME	Date and Time of IFCAS mission	20	Char
FM	IFCAS Preplanned Mission Number	5	Char
SIDE	B(lue), O(pfor), or W(hite)	1	Char
ORG	Battery Identifiy	20	Char
TARGET	IFCAS Target Group Name	5	Char
X	IFCAS Target X coordinate	4	Integer
Y	IFCAS Target Y coordinate	4	Integer
MILES	IFCAS Weapon type code	1	Integer
SHELL	Shell Type Code	2	Char
FUSE	Fuse Type Code	2	Char

1> print ifmf

time	fm	side	org	target	x	y	miles	shell	fuse
30-Nov-89 07:38:18	13	B	DA1		D1	36500	80000	18	DP	VT
30-Nov-89 07:54:00	14	O	OA4 122MM SP		SMK1	32100	80000	18	HC	PD
30-Nov-89 07:58:00	15	O	OA4 122MM SP		SMK2	32500	80000	18	HC	VT
30-Nov-89 08:02:00	16	O	OA4 122MM SP		SMK3	33100	80000	18	HC	VT
30-Nov-89 08:06:00	17	O	OA4 122MM SP		SMK4	31000	80000	18	HC	VT
30-Nov-89 08:11:35	20	O	OA4 122MM SP		1	29300	80000	18	HE	PD
30-Nov-89 08:16:14	23	O	OA5 122MM SP		SMK6	32100	80000	18	HC	VT
30-Nov-89 08:17:00	21	O	OA2 152MM SP		9F4	29400	80000	13	FA	VT
30-Nov-89 08:20:55	25	O	OA4 122MM SP		2	29400	80000	18	HE	PD
30-Nov-89 08:25:14	28	O	OA4 122MM SP		3	29400	80000	18	HE	PD
30-Nov-89 08:30:00	29	O	OA2 152MM SP		9F7	32900	80000	13	FA	VT
30-Nov-89 08:32:13	31	B	DB1		2	36700	80000	18	DP	VT
30-Nov-89 08:43:09	33	B	DA1		3	29400	80000	18	DP	VT

IFCAS CASUALTIES TABLE (IFCT)

The IFCAS Casualties Table contains a list of all casualties assessed as a result of IFCAS missions fired during this mission segment.

Element Name	Element Description	Units
TIME	Date and Time of IFCAS mission	20 Char
FM	IFCAS Mission ID	5 Char
SIDE	B(lue), O(pfor), or W(hite)	1 Char
PID	ID of player killed by IFCAS	3 Char
LPN *	LPN of player killed by IFCAS	2 Integer
X	Target position location X coordinate	4 Integer
Y	Target position location Y coordinate	4 Integer

* LPN (Logical Player Number) is a unique index used by the realtime system at the NTC.

1> print ifct

time	fm	side	pid	lpn	x	y
30-Nov-89 09:03:25	46	O	314	186	34750	117863

MINEFIELD CASUALTIES TABLE (MCT)

The Minefield Casualties Table contains a list of all casualties assessed as a result of minefields during this mission segment.

Element Name	Element Description	Units
TIME	Date and Time of minefield casualty	20 Char
PID	ID of player killed by minefield	3 Char
LPN *	LPN of player killed by minefield	2 Integer
X	Target position location X coordinate	4 Integer
Y	Target position location Y coordinate	4 Integer

* LPN (Logical Player Number) is a unique index used by the realtime system at the NTC.

```
>range of m is mct
>retrieve (m.all)

|time                          |pid    |lpn    |x      |y      |
|------------------------------|-------|-------|-------|-------|
|------------------------------|-------|-------|-------|-------|
End of Request - 0 Row
```

CONTROL MEASURE TABLE (CM)

The Control Measure Table contains a list of all initial control measures and control measures added or deleted during the mission segment.

Element Name	Element Description	Units	
TIME	Date and Time Control Measure Added	20	Char
CM_IDX	index of control measure (1 - 200)	2	Integer
SIDE	(B)lue, (O)pfor, (W)hite	1	Char
STATE	(I)nitial, (A)dd or (D)elete	1	Char
STATUS	(C)urrent or (P)roposed	1	Char
OPSYS *	Operating System Code	3	Char
ECHELON	Echelon code	3	Char
CMTYPE *	Control Measure Type	1	Char
PURPOSE	See Control Measure Purpose Description Table, p. A-22)	10	Char
POINTS	Number of points used	1	Integer
X1	X coordinate, point 1	4	Integer
Y1	Y coordinate, point 1	4	Integer
X2	X coordinate, point 2	4	Integer
Y2	Y coordinate, point 2	4	Integer
X3	X coordinate, point 3	4	Integer
Y3	Y coordinate, point 3	4	Integer

```
                                o
                                o
                                o

                       (Up to 12 Points)
```

* Operating System Code
  Mnv - Manuever;
  FS - Fire Support;
  CSS - Combat Service Support;
  INT - Intelligence;
  ADA - Air Defense;
  M/C - Mobility/Counter mobility;
  n/c - Not Specified

* Control Measure Type
  Point (P), Line (L) or Area (A)

CONTROL MEASURE TABLE (CM)

```
1> print cm

Control Measure Table
```

time	cm_idx	side	state	status	opsys	ech	cmtyp	purpose	point	x1	y1	x12	y12
30-Nov-89 07:32:14	2	B	I	C		Bde	L	basic line	11	62750	112000	80000	70000
30-Nov-89 07:32:14	3	B	I	P	M/C	Bde	L	basic line	10	36550	119825	80000	70000
30-Nov-89 07:32:14	4	B	I	P	M/C	Bde	A	basic area	4	32475	122250	80000	70000
30-Nov-89 07:32:14	5	B	I	C	M/C	Bde	A	basic area	6	25850	122125	80000	70000
30-Nov-89 07:32:14	6	B	I	P	M/C	Bde	A	basic area	9	27300	124000	80000	70000
30-Nov-89 07:32:14	7	B	I	C	M/C	Bde	A	basic area	11	55850	119775	80000	70000
30-Nov-89 07:32:14	8	B	I	C	M/C	Bde	L	basic area	5	48775	112500	80000	70000
30-Nov-89 07:32:14	9	B	I	C	M/C	Bde	L	phase line	6	30000	127000	80000	70000
30-Nov-89 07:32:14	10	B	I	C	M/C	Bde	L	phase line	9	9825	128175	80000	70000
30-Nov-89 07:32:14	11	B	I	C	M/C	Bde	L	phase line	8	41750	122000	80000	70000
30-Nov-89 07:32:14	12	B	I	P	M/C	Bde	L	basic line	12	31425	116700	31250	114850
30-Nov-89 07:32:14	13	B	I	P	M/C	Bde	A	basic area	4	29750	116620	80000	70000

CONTROL MEASURE TABLE (CM)

UNIT TYPE DESCRIPTIONS

RED UNIT TYPES

Code	Platoon	Company	Battalion	Regiment
0	1st	1st	1st	TOC
1	2nd	2nd	2nd	AT
2	3rd	3rd	3rd	Artillery
3	4th	4th	TOC	Trans
4	AT	1st Hq	AT	MRR 1
5	Engineers	2nd Hq	Artillery	MRR2
6	Chemical	3rd Hq	Engineers	-
7	Armored Cav	4th Hq	Chemical	-
8	ABN Infantry	Recon	Armored Cav	-
9	Army Aviation	AT	ABN Infantry	-
10	Air Cav	Artillery	Army Aviation	-
11	Commo	Engineers	Air Cav	-
12	TNSP	Chemical	Commo	-
13	Medical	Armored Cav	TNSP	-
14	EW	S&S	Army Aviation	-
15	S&S	Army Aviation	EW	-
16	ADA	Air Cav	S&S	-
17	-	Commo	ADA	-
18	-	TNSP	-	-
19	-	Medical	-	-
20	-	EW	-	-
21	-	S&S	-	-
22	-	ADA Battery	-	-

BLUE UNIT TYPES

Code	Platoon	Company	Battalion	Div/ Bde
0	1st	A Co	1st	TOC
1	2nd	B Co	2nd	TRNS
2	3rd	C Co	3rd	-
3	4th	D Co	4th	-
4	AT	CP Co A	5th	-
5	Mortar	CP Co B	6th	-
6	FIST	CP Co C	7th	-
7	Scout	CP Co D	TOC	-
8	4.2	Artillery	Combat Trans	-
9	Manpad	Engineers	Field Trans	-
10	Engineers	Chemical	Artillery	-
11	Chemical	Armored Cav	Engineers	-
12	Armored Cav	ABN Infantry	Chemical	-
13	ABN Infantry	Army Aviation	Armored Cav	-
14	Army Aviation	Air Cav	ABN Infantry	-
15	Air Cavalry	Commo	Army Aviation	-
16	Commo	TNSP	Air Cavalry	-
17	TNSP	Medical	Commo	-
18	Medical	EW	TNSP	-
19	EW	S&S	Medical	-
20	S&S	DIVAD	EW	-
21	DIVAD	-	S&S	-
22	-	-	DIVAD	-

CONTROL MEASURE PURPOSE DESCRIPTIONS

check pt	–	check point
coordinat	–	coordination point
start pt	–	start point
release pt	–	release point
passage pt	–	passage point (minefield)
depart pt	–	departure point
remote sen	–	remote sensor
p-p target	–	pre-planned target point
basic line	–	basic line (used to draw numerous figures)
axis of ad	–	axis of advance
phase line	–	phase line
tank ditch	–	tank ditch
concertina	–	concertina wire
dir atk rt	–	direct attack route
boundary	–	sector boundary
trace FEBA	–	trace Forward Edge of the Battle Area
FEBA	–	Forward Edge of the Battle Area
limit adv	–	Limit of advance
departure	–	departure line
LD / LC	–	Line of Departure / Line of Contact
prob deply	–	Probable line of deployment
FSCL	–	Fire Support Coordination Line
RFL	–	Restrictive Fire Line
CFL	–	Coordinated fire line

MSR	–	Main Supply Route
basic area	–	basic area (used for multiple shapes)
operation	–	area of operations
assembly	–	assembly area
attack pos	–	attack position area
drop zone	–	drop zone area
fire suppt	–	fire support area
landing zn	–	landing zone area
FARP	–	Foreward Area Re-arm/Refuel point
objective	–	objective area
patrolbase	–	patrol base area
pickup zn	–	pickup zone area
scat mnfld	–	scatterable minefield
support	–	support area
group tgt	–	group target area
RFA	–	Registered Fire Area
non fire	–	non fire area
contaminat	–	contaminated area
battle pos	–	battle position area
minefield	–	minefield area
gap/bridge	–	gap / bridge area
rad marker	–	radiation marker area
passage	–	minefield passage area

MISSION DATABASE DATA DICTIONARY
ELEMENT DESCRIPTION

Element	Element Description	Element	Element Description
PID	Player identification (Bumper No.)	TPID	Target ID (bumper number)
LPN	Logical player number	TLPN	Target LPN
SIDE	B(lue), O(pfor), or W(hite)	RESULT	N(ear miss), H(it) orK(ill)
INST	I(nstrumented) or N(ot instrumented)	FPID	Firer ID (Bumper number)
ACTIVE	0 - undetermined, 1 - active, 2 - not active	FLPN	Firer LPN
PTYPE	Player type code (see PVWT)	FRAT	Fratricide indicator (Y/N)
ORG	Unit name	TX	Target position location of x coordinate
TRACK	T(racked) or U(ntracked) by RDMS	TY	Target position location of y coordinate
PSTAT	Player status code	FX	Firer position location of x coordinate
TIME	Date and time of update	FY	Firer position location of y coordinate
UNIT	Unit name	NET	Radio net (1 or 2)
LINU	Next higher line unit	DURATION	Duration of transmission in mm:ss
STAU	Next higher statistical unit	TARGET	IFCAS target number
UTYPE	Unit type code	TGT_IDX	Target index
ECHELON	Plt, Co, Bn, Bde, Div or Reg	GROUP	IFCAS target group name
DESC	Unit description	FM	IFCAS preplanned mission number
VEHICLE	Vehicle description	SHELL	Shell type code
MILES	MILES weapon code	FUSE	Fuse type code
WEAPON	Weapon description	CM_IDX	Index of control measure (1-200)
IAMMO	Initial ammo load (not used)	STATE	I(nitial), A(dd), or D(elete)
AMMO	Ammunition remaining	STATUS	C(urrent) or P(roposed)
X	Position location of x coordinate	OPSYS	Operating system code
Y	Position location of y coordinate	CMTYPE	Control measure type: P(oint), L(ine) or A(rea)
Z	Position location of z coordinate	PURPOSE	Description of control measure purpose
		POINTS	Number of points used x1,y1 ...x12,y12

	PSIT	PSUT	USIT	UTT	USUT	PVWT	FET	PET	CT	GPLT	APLT	IFTT	IFGT	IFMF	IFCT	MCT	CM
PID	x	x					x		x	x	x				x	x	
LPN	x	x					x		x	x	x				x	x	
SIDE	x	x	x	x		x						x	x	x	x		x
INST	x	x															
ACTIVE	x																
PTYPE	x	x				x											
ORG	x	x												x			
TRACK	x	x															
PSTAT	x	x															
TIME		x			x		x	x	x	x	x			x	x	x	x
UNIT			x		x												
LINU			x														
STAU			x		x												
UTYPE			x	x	x												
ECHELON			x	x													x
DESC				x													
VEHICLE						x											
MILES						x	x	x						x			
WEAPON						x											
IAMMO						x											
AMMO							x										
X							x		x	x	x	x		x	x	x	x1..x12
Y							x		x	x	x	x	x	x	x	x	y1..y12
Z											x						

MISSION DATABASE DATA DICTIONARY
DATA ELEMENT DISTRIBUTION ACROSS TABLES
(Continued)

	PSIT	PSUT	USIT	UTT	USUT	PVWT	FET	PET	CT	GPLT	APLT	IFTT	IFGT	IFMF	IFCT	MCT	CM
TPID								x									
TLPN								x									
RESULT								x									
FPID								x									
FLPN								x									
FRAT								x									
TX								x									
TY								x									
FX								x									
FY								x									
NET									x								
DURATION									x								
TARGET												x	x1..x10	x			
TGT_IDX												x					
GROUP													x				
FM														x	x		
SHELL														x			
FUSE														x			
CM_IDX																	x
STATE																	x
STATUS																	x
OPSYS																	x
CMTYPE																	x
PURPOSE																	x
POINTS																	x

Research Note

USER'S GUIDE TO THE BATTLE DAMAGE ASSESSMENT (BDA) DATABASE

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1.0 Purpose.

The purpose of this document is to describe a method of accessing the Battle Damage Assessment (BDA) data collected at the Combat Training Centers (CTC). These data are archived at the Army Research Institute Presidio of Monterey Field Unit (ARI-POM). They are available to those researchers and analysts who have been granted access through CAC-T to the archive.

The BDA data is physically located on a computer system at ARI-POM. The structure of the database has been simplified in order to accommodate the different formats of Battle Damage Assessment reports produced at the CTCs. The data from all three CTCs (National Training Center, Joint Readiness Training Center & Combat Manuever Training Center) are stored in just two tables, the BDA table (which reports losses of targets to specific weapon systems) and the Initial Strength table (which reports the number of vehicles starting and the number lost during the training exercise).

The Weapon table and the Target table contain the descriptions of the different systems in use at the respective CTCs.

Figure 1 Tables contained in the Battle Damage Assessment (BDA) database.

This document uses the Structured Query Language (SQL) interface to the data in our database. Our intent here is not to teach the use of SQL, but use it as an instrument to teach the user the schema and relationships of the BDA data. Your problems as a researcher are: 1) understanding the computer system and its operating system on which the data reside (currently the VMS environment), 2) learning the access methods within the database language to extract the pertinent data to your research (using SQL within INGRES) and 3) understanding the structure and relations of the data. This document addresses the third problem, that of understanding the BDA tables and the data within.

2.0 Introduction.

The BDA data are collected at each of the three Combat

1

Training Centers and sent to ARI-POM. The NTC has perhaps the most mature set of BDA's of the three CTCs. The JRTC would come in a close second in content and completeness and the newest CTC, the CMTC is still developing a stable format. But as stated earlier, a common data structure represents all three CTC's BDA data.

2.1 The National Training Center BDAs.

At the NTC, the BDA data is collected by the Observer/Controllers (OC) out in the field. Each of the IMILES equipped players is debriefed after the close of the training exercise. Counts of target systems destroyed are summarized by the weapon code of the killing system. This information is transmitted to the control center for inclusion in the After Action Review (AAR) and eventually into the Take Home Package (THP) as historic information. The THP is the source of the BDAs that are included in the BDA database tables. They are manually transcribed into the database from hard copy (paper data). This method is necessary to conform to a standard format and reliable content.

The BDA data for the NTC may not agree with the digital data contained within the mission databases. This is due to the fact that only a subset of players on the training ground have instrumentation systems that record the field events. With this in mind, one might assume that the instrumented summaries would always be less than those reported by the OCs in the THP, but this may not be the case. Many times an instrumented player may report an event, such as a kill, and continue to report it after the first time. Think of the tank that has been destroyed by each weapon system that sees it (known as over-kill). Each of these kills is reported in the digital database, so special care must be taken when comparing the BDAs collected at the end of a training exercise (the state of players at end) to the history of the battle in the mission database (the continuous flow of data).

2.2 The Joint Readiness Training Center BDA's.

Data are collected in much the same fashion at the JRTC as at the NTC. Observers / Controllers manually collect and record the damaged / destroyed target types and summarize them by the killing weapon system. These data are also provided in the Take Home Package.

2.3 The Combat Maneuver Training Center BDAs.

The CMTC data are collected after each training mission, and are derived from debriefing the miles firmware on each vehicle or manpack. It is of the same nature as the NTC's data, for similar training exercises are carried out there only on a smaller scale and without the instrumented systems.

2

3.0 Getting Started.

Examples have been provided to assist the user in understanding the data schema, and users should refer to an SQL reference manual if additional techniques are required. An appendix at the end of the document explains the contents of the CTC BDA database tables.

To access the database, log into a terminal connected to the ARI-POM VAX computer system. The user needs to be a valid INGRES (version 6 or higher) user (most accounts on our machine are set up this way). At the monitor prompt enter the following:

$ isql bda

where 'isql' is the program name - Interactive System Query Language - and "bda" is the Battle Damage Assessment database name.

The exercises in this document are located on disk, and need not be keyed in by the user. The path / filename string is as follows:

```
dua1:[ctcbda.exercise]example1.sql
dua1:[ctcbda.exercise]example2.sql
dua1:[ctcbda.exercise]example3.sql
```

Feel free to copy these examples into your working directory and modify them as you desire, but please do not overwrite the files in the exercise subdirectory.

Example #1. Using the Initial Strength table.

The following is a simple example of using the Structured Query Language (SQL) to display data at your terminal. The query acts upon the Initial Strength table, and uses the description in the Target table to clarify the data being presented.

```
 1> /************************************************************/
 2> /*       This SQL script is example #1 in the BDA users    */
 3> /*       guide.  It uses the initial Strength table and    */
 4> /*       the Target table.                                 */
 5> /************************************************************/
 6> select  i.mission_id,    /*      list of columns to        */
 7>         i.target_side,   /*      display on terminal       */
 8>         t.target_desc,
 9>         i.starting,
10>         i.lost
11> from    initial_strength i,    /* tables to use            */
12>         target t
13> where   i.mission_id    =      'N901C_20'
14> and     i.target_type   =      t.target_type
15> and     i.target_side   =      t.target_side
```
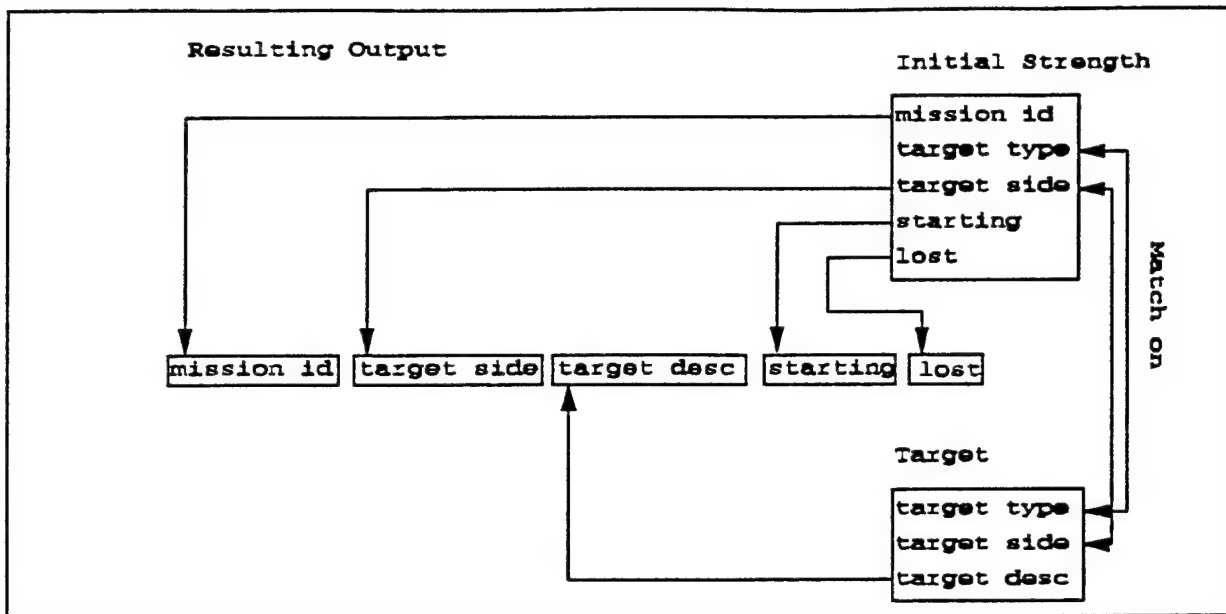
```
16> order    by i.target_side
```

```
+----------+------+--------------------+------+------+
|mission_id|target|target_desc         |starti|lost  |
+----------+------+--------------------+------+------+
|N901C_20  |B     |Aviation            |    0 |    0 |
|N901C_20  |B     |Close Air Support   |    0 |    0 |
|N901C_20  |B     |HMMWV               |    0 |    0 |
|N901C_20  |B     |TOW                 |    0 |    0 |
|N901C_20  |B     |Combat Engineer Veh.|    2 |    1 |
|N901C_20  |B     |Mortar              |    3 |    1 |
|N901C_20  |B     |APC (M113)          |   24 |    8 |
|N901C_20  |B     |IFV (Bradley)       |   30 |   24 |
|N901C_20  |B     |Tank (M1A1)         |   29 |   29 |
|N901C_20  |O     |AT-5                |    0 |    0 |
|N901C_20  |O     |Aviation            |    0 |    0 |
|N901C_20  |O     |HIND                |    0 |    0 |
|N901C_20  |O     |MTLB                |    0 |    0 |
|N901C_20  |O     |BRDM                |    2 |    0 |
|N901C_20  |O     |SA-7                |    2 |    1 |
|N901C_20  |O     |ZSU-23-4            |    2 |    1 |
|N901C_20  |O     |BMP                 |   18 |    9 |
+----------+------+--------------------+------+------+
(17 rows)
End of Request
```

Notice how column names in the Target table are the same as some of the column names in the Initial Strength table. This highlights how to match the two tables to obtain the correct results. This standard also applies for the BDA table columns when matching columns with the Target and/or Weapon tables.

4

Example #2. Using the BDA table.

This example will display the Battle Damage Assessments for target types destroyed by weapon systems. We shall include the description of weapons and targets to clarify the output. Also, a technique for isolating a particular target type will be demonstrated.
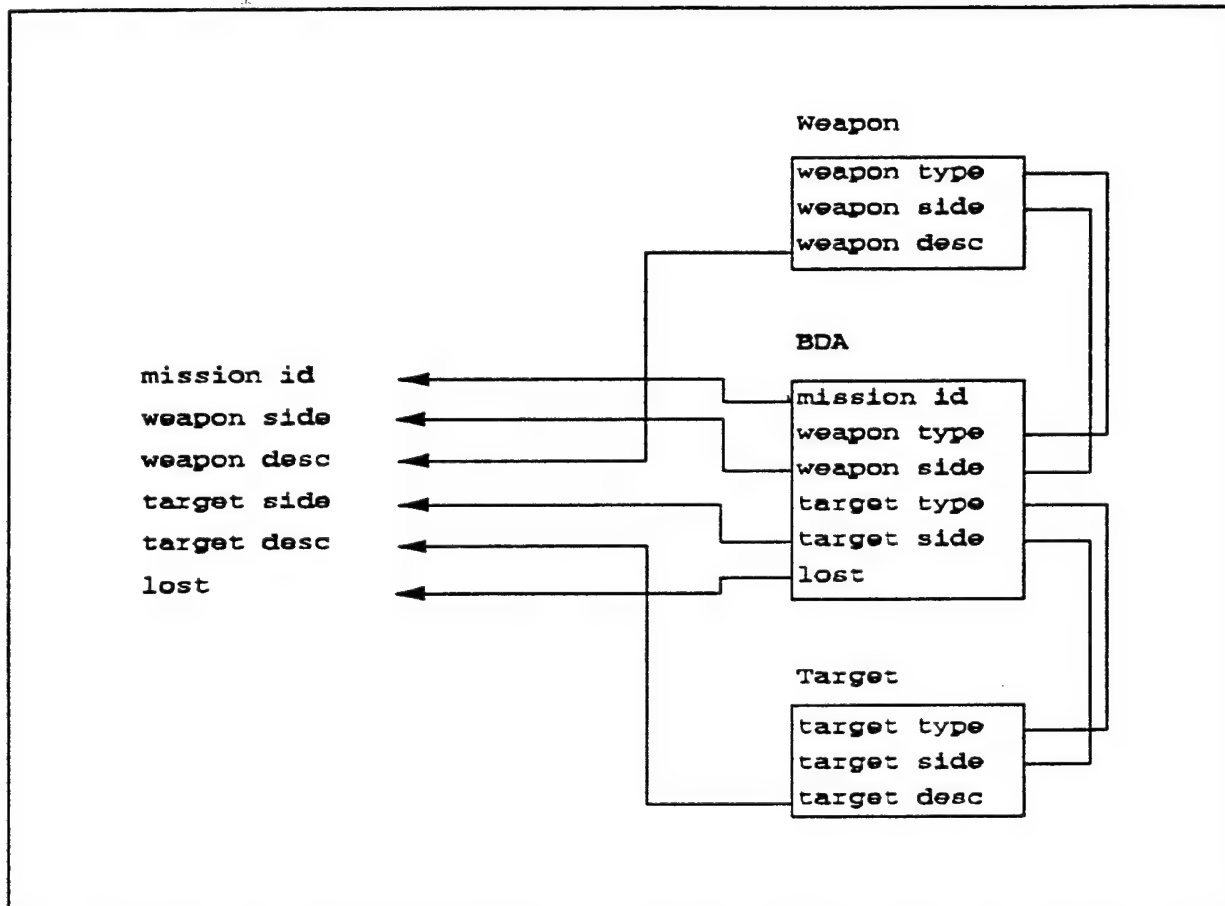
Figure 3 Relationship of the Weapon and Target tables to the BDA table.

5

```
 1> /*****************************************************/
 2> /*      SQL script for example # 2 from guide    */
 3> /*      to using BDA database.                   */
 4> /*****************************************************/
 5> select  b.mission_id,
 6>         b.weapon_side,
 7>         w.weapon_desc,
 8>         b.target_side,
 9>         t.target_desc,
10>         b.lost
11> from    bda b,
12>         weapon w,
13>         target t
14> where   b.mission_id    =       'N901C_20'
15> and     b.target_side   =       'B'
16> and     b.weapon_type   =       w.weapon_type
17> and     b.weapon_side   =       w.weapon_side
18> and     b.target_type   =       t.target_type
19> and     b.target_side   =       t.target_side
20> order   by mission_id,weapon_side,weapon_desc
```

mission_id	weapon	weapon_desc	target	target_desc	lost
N901C_20	O	Mines	B	Tank (M1A1)	1
N901C_20	O	Mines	B	IFV (Bradley)	6
N901C_20	O	Tank	B	APC (M113)	1
N901C_20	O	Tank	B	Mortar	1
N901C_20	O	Tank	B	IFV (Bradley)	2

Example #3. Computing some simple statistics.

This example uses a couple of new tricks, getting rid of a logical view of two tables (drop example3), creating a logical view of two tables (example3) and computing percentages using the numeric operators provided with the Ingres SQL language.

```
 1> /*****************************************************/
 2> /*      SQL script file for example # 3 in guide to   */
 3> /*      using BDA database.  Shows use of the 'create */
 4> /*      view' command, and housekeeping of created    */
 5> /*      objects in the database.                      */
 6> /*****************************************************/
 7> drop example3

 2> create view example3    (mission_id,
 3>                          weapon_type,
 4>                          weapon_side,
 5>                          target_type,
 6>                          target_side,
 7>                          start_strength,
 8>                          total_lost,
 9>                          casualty_to)
10> as      select          b.mission_id,
11>                         b.weapon_type,
12>                         b.weapon_side,
13>                         b.target_type,
14>                         b.target_side,
15>                         i.starting,
16>                         i.lost,
17>                         b.lost
18>         from            bda b,
19>                         initial_strength i
20>         where           b.mission_id   =       'N901C_20'
21>         and             i.mission_id   =       'N901C_20'
22>         and             b.target_type  =       i.target_type
```

6

```
23>         and           b.target_side   =       i.target_side
 2> /*****************************************************/
 3> /*      Lets look at what we have done....           */
 4> /*****************************************************/
 5> select * from example3
```

```
+----------+------+------+------+------+------+------+------+
|mission_id|weapon|weapon|target|target|start_|total_|casual|
+----------+------+------+------+------+------+------+------+
|N901C_20  |     1|B     |     2|O     |    18|     9|     1|
|N901C_20  |     2|B     |     2|O     |    18|     9|     4|
|N901C_20  |     4|B     |     2|O     |    18|     9|     4|
|N901C_20  |     4|B     |    12|O     |     2|     1|     1|
|N901C_20  |     7|B     |     6|O     |     2|     1|     1|
|N901C_20  |     1|O     |     2|B     |    30|    24|     2|
|N901C_20  |     1|O     |     3|B     |    24|     8|     1|
|N901C_20  |     1|O     |    19|B     |     3|     1|     1|
|N901C_20  |    11|O     |     1|B     |    29|    29|     1|
|N901C_20  |    11|O     |     2|B     |    30|    24|     6|
+----------+------+------+------+------+------+------+------+
(10 rows)
```

```
 2> /********************************************************/
 3> /*      OK, lets use the view 'example3' to construct a */
 4> /*      query that will compute percents of force lost  */
 5> /*      by total force and to individual weapon systems.*/
 6> /********************************************************/
 7> select   e.mission_id,
 8>          e.weapon_side,
 9>          w.weapon_desc,
10>          e.target_side,
11>          t.target_desc,
12>          per_force_lost = (float4(e.total_lost)/
13>                            float4(e.start_strength)),
14>          per_lost_to    = (float4(e.casualty_to)/
15>                            float4(e.total_lost))
16> from     example3 e,
17>          weapon w,
18>          target t
19> where    e.weapon_type    =       w.weapon_type
20> and      e.weapon_side    =       w.weapon_side
21> and      e.target_type    =       t.target_type
22> and      e.target_side    =       t.target_side
```

```
+----------+------+--------------------+------+-----------------------+----------+----------+
|mission_id|weapon|weapon_desc         |target|target_desc            |per_force_l|per_lost_to|
+----------+------+--------------------+------+-----------------------+----------+----------+
|N901C_20  |O     |Mines               |B     |Tank (M1A1)            |    1.000 |    0.034 |
|N901C_20  |O     |Mines               |B     |IFV (Bradley)          |    0.800 |    0.250 |
|N901C_20  |O     |Tank                |B     |IFV (Bradley)          |    0.800 |    0.083 |
|N901C_20  |O     |Tank                |B     |APC (M113)             |    0.333 |    0.125 |
|N901C_20  |O     |Tank                |B     |Mortar                 |    0.333 |    1.000 |
|N901C_20  |B     |25mm Bradley/M2/IFV |O     |BMP                    |    0.500 |    0.444 |
|N901C_20  |B     |TOW                 |O     |BMP                    |    0.500 |    0.444 |
|N901C_20  |B     |Tank (M1A1)         |O     |BMP                    |    0.500 |    0.111 |
|N901C_20  |B     |Artillery           |O     |ZSU-23-4               |    0.500 |    1.000 |
|N901C_20  |B     |25mm Bradley/M2/IFV |O     |SA-7                   |    0.500 |    1.000 |
+----------+------+--------------------+------+-----------------------+----------+----------+
```

7

Appendix A - Combat Training Center (CTC) Battle Damage Assessment tables

The Battle Damage Assessment tables are composed of two types of tables for the CTCs. They are data tables (the BDA and Initial Strength) and parameter tables (the Target and Weapon).

The format and definition of the BDA table is as follows:

Column name	Format	Description
mission_id	c10	The training mission name. An eight digit field with the first character identifying the CTC from which the data originated. i.e. N for NTC, J for JRTC and C for CMTC. The second and third digits are for year of rotation (90, 91 etc..). The third digit is a hexadecimal number between 1 and E (or 1 to 14 decimal) and identifies the rotation number. Digits five and six identify the force type. Digits seven and eight are for the day of month when the training mission was held.
weapon_type	i2	A code identifying the weapon system. See the Weapon table for a complete list of codes and the weapon descriptions.
weapon_side	c1	B for blueforce or O for opposing force.
target_type	i2	Code identifying the target type of the casualty. See the Target table for a complete list of codes and the target type descriptions.
target_side	c1	B for blueforce or O for opposing force.
lost	i2	The number of targets of this 'type' lost to the weapon system in weapon_type.

The format and definition of the Initial Strength (initial_strength) table is as follows:

Column name	Format	Description
mission_id	c10	Same as for mission_id in BDA table, above.
target_type	i2	Same as for target_type in BDA table, above.
target_side	c1	Same as for target_side in BDA table, above.
starting	i2	The count of this target type available at the start of the training exercise.
lost	i2	The count of this target type lost as a casualty during the training exercise. This is the total number of target types lost during the mission to all weapon types. The BDA table has the weapon system casualty breakdowns.

The format and definition of the Weapon table is as follows:

Column name	Format	Description
weapon_type	i2	Same as for weapon_type in BDA table, above.
weapon_side	c1	Same as for weapon_side in BDA table, above.
weapon_desc	c20	A literal string with a brief description of the weapon system.

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Weapon System codes that are currently in effect at the CTCs are as follows:

Weapon Type	Weapon Side	Weapon Description
1	B	Tank (M1A1)
2	B	TOW
3	B	Dragon/Viper
4	B	25mm Bradley/M2/IFV
5	B	Attack Helicopter
6	B	Close Air Support
7	B	Artillery
8	B	Mines
9	B	maintenance
10	B	MILES malfunction
11	B	60mm Mortar
12	B	81mm Mortar
13	B	105mm Howitzer
14	B	AC 130
15	B	Stinger
16	B	50 cal machine gun
17	B	FASCAM
18	B	20mm Vulcan
19	B	small arms fire
20	B	Friendly Fire
1	O	Tank
2	O	AT-3 (BMP)
3	O	73mm (BMP)
4	O	RPG-16
5	O	RPG-18
6	O	Close Air Support
7	O	122mm SP Howitzer
8	O	AT-6 (HIND)
9	O	30mm (HIND)
10	O	57mm Rocket (HIND)
11	O	Mines
12	O	SA-7
13	O	SA-9
14	O	AT-5
15	O	Artillery
16	O	ZSU-23-4
17	O	Friendly Fire

The format and definition of the Target table is as follows:

Column name	Format	Description
target_type	i2	Same as for the target_type in BDA table, above.
target_side	c1	Same as for the target_side in BDA table, above.
target_desc	c20	A literal string with a brief description of the target type.

Target Type	Target Side	Target Description
1	B	Tank (M1A1)
2	B	IFV (Bradley)
3	B	APC (M113)
4	B	TOW
5	B	Vulcan
6	B	Combat Engineer Veh.
7	B	Aviation
8	B	60mm Mortar
9	B	81mm Mortar
10	B	105mm Howitzer
11	B	Stinger
12	B	Attack Helicopter
13	B	Scout Helicopter
14	B	Utility Helicopter
15	B	Q-36 Radar
16	B	155mm Howitzer
17	B	M2
18	B	Improved TOW Vehicle
19	B	Mortar
20	B	FIST-V
21	B	M577
22	B	Close Air Support
23	B	HMMWV
24	B	Infantry
1	O	Tank
2	O	BMP
3	O	BRDM
4	O	AT-5
5	O	MTLB
6	O	ZSU-23-4
7	O	HIND
8	O	Aviation
9	O	GRAIL
10	O	Utility Helicopter

Target Type	Target Side	Target Description
11	O	82mm Mortar
12	O	SA-7
13	O	SA-9
14	O	122mm Howitzer
15	O	120mm Mortar
16	O	Close Air Support
17	O	Infantry

VAX—generated Graphics

DATABASE GRAPHICS

- TWO PROGRAMS PLOT BATTLEFIELD "SNAPSHOTS" AND DIRECT FIRE INTENSITY

- TAB _ DESCRIBES "VTCMIF", THE PROGRAM WHICH PROVIDES BATTLEFIELD "SNAPSHOTS"

- THE PROGRAM "DBBIP" PROVIDES DIRECT FIRE INTENSITY AND IS DESCRIBED IN HELP FILE "DBBIP.HLP"

- USEFUL TO HAVE EXTRACTS OF TABLES ON HAND BEFORE RUNNING GRAPICS (FET,CMT)

BATTLEFIELD GRAPHICS

To invoke program ...

$ VTCMIF   <cr>

or if that doesn't work try

$ run DUA1:[BDMDMS]VTCMIF   <cr>

USER DOCUMENTATION FOR VTCMIF.EXE

by Jack D. Baldwin and Saleem Nicola

The BDM Corporation

This file contains instructions for use of the VTCMIF program. VTCMIF may be used to view graphical representations of the contents of five tables in NTC mission databases: The Indirect Fire Missions Fired (IFMF) table, the Control Measure Table (CMT), the Control Measure Add table (CMA), the Ground Player Location Table (GPLT) and the Air Player Location Table (APLT). The user may set the retrieve specifications for each of these tables, examine the resulting graph, and decide whether to plot the graphics on hard copy.

The program is divided into four sections:

        1) the Overviews and Zoom-in coordinate selection
        2) the Indirect Fire plots
        3) the Control Measure plots
        4) the Player plots

The first section (overviews) allows the user to examine a graph of the entire NTC and all the control measures and fire missions. From the overview, he may determine the most ideal coordinates to "zoom in" on for the best graphical representation of the intended data. After a set of zoom-in coordinates have been selected, he may plot out particular indirect fire missions (second section) on the zoom-in grid, and opt to plot as many as he likes on hard copy. Next, he may do the same with control measures (third section), and then with players (fourth section). He may skip any section he chooses.

Note finally that the program is intended for generating supporting graphics for reports, and not as a tool for exploring the data. Therefore, it is imperative that the user be familiar with the mission before he uses the program, so that he knows approximately what he will see, as well as where on the map and when relative to the battle he will see it. Thus, while running the program, it is extremely helpful to have on hand printouts (in any sorted order that may be useful) of all or some of the five tables listed above.

To run the program, enter the proper command (defined elsewhere). Note that because of the graphics, the program must be run on a terminal with the capability of interpreting REGIS graphics commands (a VT125, or other compatible terminal). Following is an explanation of the meaning of all prompts the program will ask:

Section 1 -- Overviews
----

1.   Enter database name:

Type the name of the NTC mission database in which the desired data is located.

2.   Control Measure Overview
         B force, O force, W force, or Continue?

       The Control Measure Overview plots out all the control measures in the Control Measure Table. You may then (after you have exited the Overviews section) "zoom in" on a particular set of coordinates and specify which control measures you wish to see. Note that the overview does not display control measures from the Control Measure Add Table. If you wish to skip the Overview, enter C (for Continue) and go on to step 3 below.

       If you wish to see the Overview, enter a force (B=Blueforce, O=Opforce, or W=White players). A grid encompassing all of the NTC will be displayed, and the control measures will be drawn to scale on the grid.

       The control measures are sorted by purpose; hit return after all the control measures of one purpose are displayed, or type X (and return) to prematurely exit the overview.

3.   Indirect Fire Overview
         Overview or Continue?

       The Indirect Fire Overview plots a small circle for each blue fire mission where it occured, from the beginning of the segment to the end. From the resulting graph, one may determine the best zoom-in coordinates for viewing indirect fire.

4.   Enter min X value (as 99):

       Once you have exited the Overviews, you may "zoom in" on a particular set of coordinates. The zoom-in may be done only once; only one set of coordinates may be specified per run of the program. The "min X value" is the leftmost (or Eastmost) X coordinate that will be displayed on the zoom-in grid. The value is the first two digits of a five-digit coordinate (i.e. the "23" of "23000"). The rightmost (or Westmost) coordinate will be eighteen plus the value you enter.

5.   Enter min Y value (as 99):

       The "min Y value" is the bottommost (or Southmost) Y coordinate that will be displayed on the zoom-in grid. Note that the Y coordinates at the NTC run (from South to North) from 87 to 99 and then from 0 to 31. The topmost (or Northmost) Y coordinate will be ten plus the value you enter (eleven plus the value you enter on the hardcopy printout).

6.   Enter hardcopy plot scaling factor:

     The scaling factor you enter tells the computer how big to make your graph
when it is sent to the printer. Enter the value as a decimal number (i.e. 1.0
or .5, etc.). 1.0 will make the graph two printer pages long; you may not enter
a higher value than 1.0. .5 will make the graph a quarter as big (half as big
in the X direction and half as big in the Y direction).

Section 2 -- Indirect Fire Plots
----

7.   Skip Indirect Fire Plots? (Y/N)

     Enter Y to skip the indirect fire section (that is, continue with prompt
#15).

8-12. Enter Nth ring radius (in meters):

     These five prompts ask for the five range bands to be blotted. Five rings,
each of the radius you enter, will be plotted around each fire mission you select
(see prompt 9, below). To eliminate a ring, enter 0.   These prompts may be
answered only once; i.e., all fire missions plotted must have the same size rings
around them.

13.   Fire mission number:

     The number of the indirect fire mission, as referenced by the IFMF table.
Once the mission rings have been plotted, you will be asked whether or not to
plot them to hard copy.

14.   Do another fire mission? (Y/N)

     Enter Y to draw another fire mission (that is, go back to prompt 13). If
you enter N, you will be asked prompt 15.

Section 3 -- Control Measure Plots

     The following prompts (15 through 18) ask you to specify which control
measures to graph, and may be entered more than once.

15.   Enter force code (B or O):

Each control measure is associated with one of the forces; B=Blueforce, O=Opforce, or W=White players. You may enter an asterisk (*) to view the control measures of all three forces.

16.   Enter table name (CMT or CMA):

If you wish to view control measures from the Control Measure Table, enter CMT. If you wish to view control measures from the Control Measure Add table, enter CMA. (The CMT contains control measures initialized before the mission began. The CMA contains control measures added during the course of the mission.)

17.   Enter Control Measure type (P,L,A):

A control measure is either a point (P), a line (L), or an area (A). Enter the appropriate letter, or an asterisk (*) to view all types of control measures.

18.   Enter Control Measure purpose:

Type the control measure purpose, or enter an asterisk (*) to view control measures corresponding to all purposes. A listing of the Control Measure Table for your database (see above) is helpful in specifying control measure purposes. Each control measure corresponding to the specifications you gave the computer in prompts 11 through 14 will now be displayed on a grid. After each control measure is displayed, the computer will ask

Plot it? (Y/N)

If you enter Y, the control measure will be placed on the grid to be sent to the line printer. Sometimes, a control measure will not appear on the grid on the screen, which generally means it will not be displayed on the printed graph.

Once all control measures corresponding to your specifications have been plotted, the computer will ask

More control measures? (Y/N):

If you enter y, the computer will start with prompt #15 again. If not, the computer will continue with prompt 19.

19.   Players

          A: Plot dead and live players
          L: Plot live players only
          D: Plot dead players only
          K: Plot players where they were killed
          N: Plot no players
       Enter player plot option:

       This prompt asks for the type of player plot you wish to make, and are
self explanatory. Entering any of the letters, except N, will cause the computer
to continue with prompt 20. N cause it to will skip to prompt 24. After players
have been plotted, this prompt will be displayed again.

20.   Player Force code (B or O):

       Type the force code of the players you wish plotted (B=Blueforce,
O=Opforce, W=White players, or *=all players).

21.   Enter table name (APLT or GPLT):

       Each mission database contains two position/location tables: the Air
Position/Location Table (APLT) and the Ground Position/Location Table (GPLT).
The GPLT contains most of the position/location data for ground players. The APLT
contains position/location data for all instrumented air players, as well as
some ground players. For instance, most position/location data for Bradleys is
stored in the APLT; the reasons for this involve the technical aspects of the
storage of the NTC digital data.

22.   Echelon identifier (i.e. A/3-041):

       You will be prompted for the echelon identifier only if you selected the
GPLT in prompt #21.   Type the echelon name of the players you wish plotted.
Echelon names are organized as follows:

```
                    2/A/3-041
                    | | \  /
       platoon number |  \ /
          company letter   |
          brigade identifier
```

To plot all the players in the force you specified, enter an asterisk (*). To plot all the players in a particular platoon, enter the entire echelon identifier as described above (i.e. 2/A/3-041). To plot all the players in a particular company, enter only the company and brigade names (i.e. A/3-041). To plot all the players in a particular brigade, enter only the brigade identifier (i.e. 3-041).
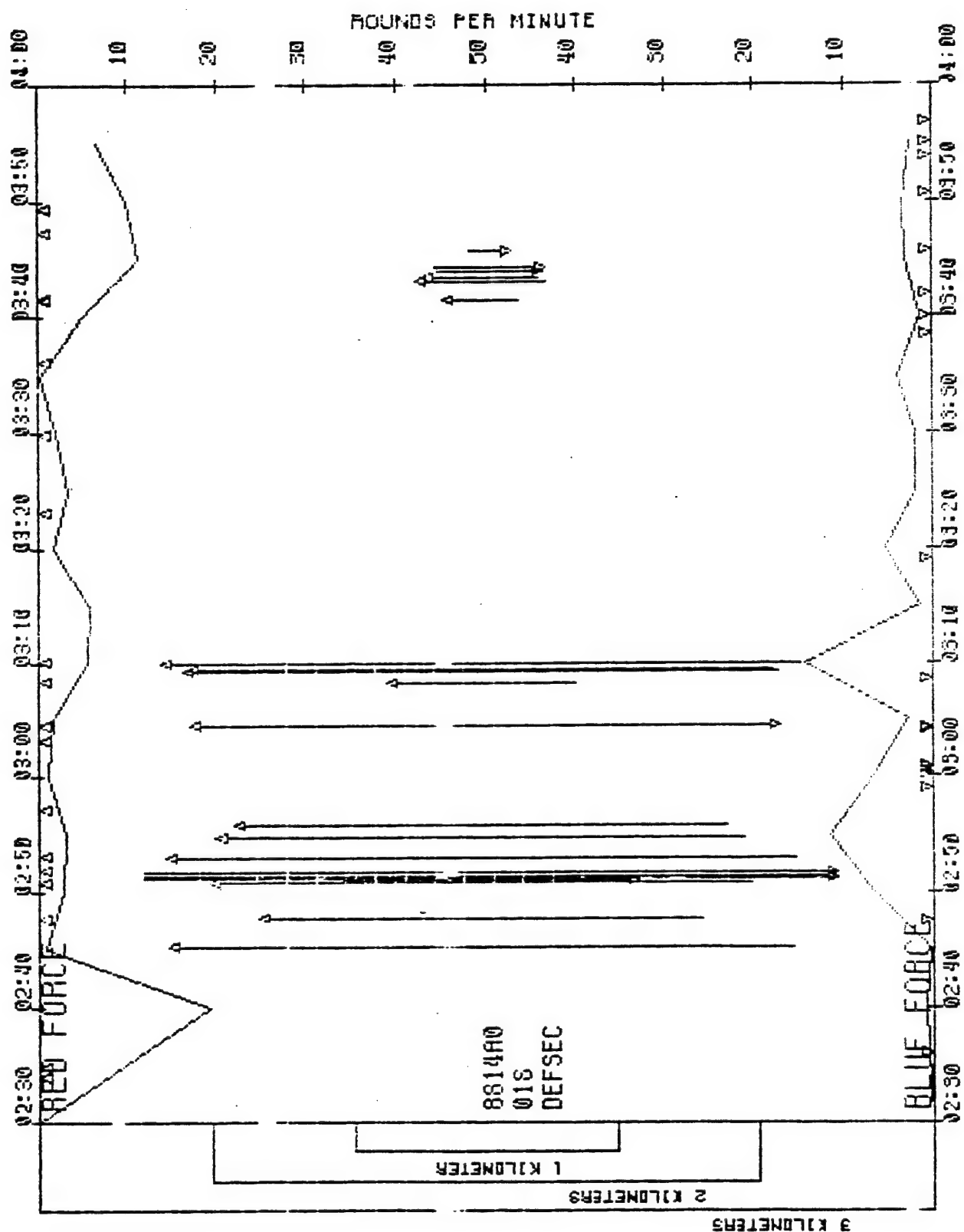
22. Enter player LPN:

You will be prompted for the player Logical Player Number (LPN) only if you selected the APLT in prompt #21. The Logical Player Number of a player is an arbitrary number assigned to a player at the start of each mission. A list of player names and corresponding LPNs is found in the Player State Initialization Table (PSIT) for each mission. By first using Ingres to find out which players are logged in the APLT, you can specify the number of an APLT player via this prompt. (If there is more than one player in the APLT which you wish to plot, either enter a * here or cycle through the prompts, entering a new LPN at each cycle.)

23. Time to plot (HH:MM:):

Enter the time at which you wish the position/location to be reported. The format is HH:MM. (If you are plotting players where they were killed, the prompt will be

        End time (HH:MM):

The end time is the time at which to stop plotting killed players.

    The players will now be plotted on the screen and on the printed graph. You will then be asked

        Plot these players to hard copy?

If you enter Y, the computer will plot the players you see on the terminal to the hard copy plot. Then, prompt 19 will be displayed again.

24. Plot contours on hard copy? (Y/N)

If you enter Y, the computer will plot contour lines on your graph. A contour line is drawn at every 50 meter increase in elevation. Plotting contour lines takes a while, so it is advisable to answer Y to this question only when you think the plot you made is nearly perfect.

6

Once the program has finished and you are back at the $ prompt, you must run a post processor to finalize your harcopy plot. To do this, enter

PLXY

At the PLT> prompt hit return. Post processing will begin, and will take a few minutes. Once the PLT> prompt comes back, enter EXIT (all capital letters). At the $ prompt, enter

PRINT PLTDAT.PLT/NOFEED

The /NOFEED qualifier is VERY IMPORTANT! A graph of all control measures and players you wished plotted will be sent to the printer.
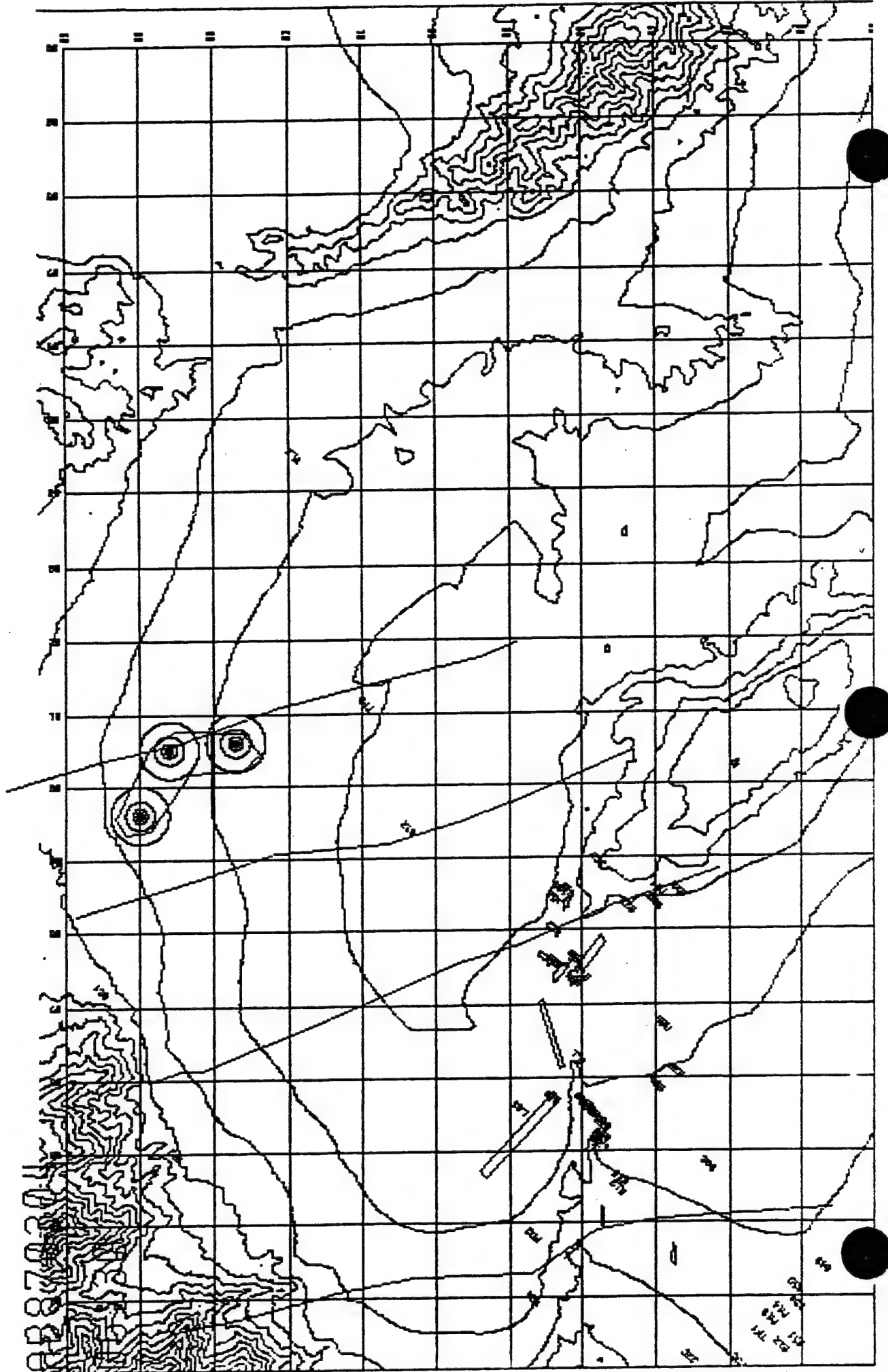
BATTLEFIELD INTENSITY PROFILE

To invoke program ...

& DBBIP   <cr>

or if that doesn't work try

$ run DUA1:[BDMDMS]DBBIP   <cr>

General: This file contains instructions for the use of program DBBIP.
This program is designed to graphically display the intensity of a force-on-
force simulation conducted at the National Training Center.   The information
displayed comes from the Fire Event Table (FET), the Pairing Event Tabale (PET)
and if the data is available, the Indirect Fire Target Location (IFTL) table.
The sample output provided with these instructions detail where and how these
data are used.

Operating Instructions
----

1.   Enter database name:

        Type the name of the NTC mission database (in UPPER case letters) in which
the desired data is located.

2.   Echelon identifier (i.e. A/3-041):

        You will be prompted for the echelon identifier. Type the echelon name
of the players you wish plotted. Echelon names are organized as follows:
                              2/A/3-041
                              | | \   /
                 platoon number | \ /
                    company letter |
                    brigade identifier

        To plot all the players in the force you specified, just press enter with
no other inputs.   To plot all the players in a particular platoon, enter the
entire echelon identifier as described above (i.e. 2/A/3-041). To plot all the
players in a particular company, enter only the company and brigade names (i.e.
A/3-041). To plot all the players in a particular brigade, enter only the brigade
identifier (i.e. 3-041).

        Once the program has finished and you are back at the $ prompt, you must
run a post processor to finalize your harcopy plot. To do this, enter
                              PLXY
At the PLT> prompt, enter the name of the database. Post processing will begin,
and will take a few minutes. Once the PLT> prompt comes back, enter EXIT (all
capital letters). At the $ prompt, enter
                        PRINT 'database'.PLT/NOFEED
where 'database' is the name you input into the program when you first began.
The /NOFEED qualifier is VERY IMPORTANT! A graph of the battlefield intensity
profile will be printed at the lineprinter.

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CTC ARCHIVE CATALOG

COMBAT TRAINING CENTER ARCHIVE CATALOG CONTENTS
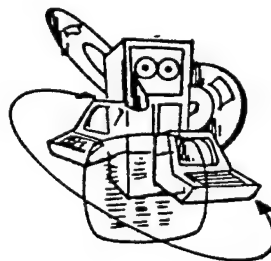
Page

COMBAT TRAINING CENTER ARCHIVE CATALOG CONTENTS

Page

INTRODUCTION

Learning to win in the fast-paced, dynamic combined-arms environment requires that Army units be challenged with realistic situations that demand rapid assessment of the tactical situation, timely decision making, and effective employment of a mix of high firepower weapons. The Army's Combat Training Centers (CTC) were established to meet this demand for an intensive combat training environment. There are four U.S. Army CTCs in the United States and Europe. The first developed was the National Training Center (NTC), Ft. Irwin. California, followed by the Joint Readiness Training Center (JRTC) at Ft. Chaffee, Arkansas, the Combat Maneuver Training Center (CMTC), at Hohenfels, Germany, and finally the Battle Command Training Program (BCTP), at Ft. Leavenworth, Kansas.

The primary mission of the CTCs is to provide highly realistic and intensified combined arms and services training in accordance with Air Land Battle Doctrine for battalion/task forces and squadrons, in low to high intensity combat environments.

Observer/controllers (O/Cs) are the coaches and trainers in the field alongside the visiting units during training at the CTC. They follow the battle and advise soldiers and their leaders on how to improve their battle tactics. They correlate subjective observations with the data collected from the instrumentation and other sources to conduct after action reviews which are the heart of the learning process at the CTC. Data—both computer-gathered information and field observations gathered by video cameras and the O/Cs—are fed to the operations center to be analyzed, even as the battle continues. Significant events which affect the outcome of the battle are isolated and their causes are determined. Performance strengths and weaknesses are highlighted and are played back for review and critique following each force-on-force and (for some CTCs) live-fire (LFX) exercise. Units receive a Take Home Package which provides statistical data and narrative description of unit performance.

A secondary objective of CTC training is to gather information which can be used to contribute to the improvement of doctrine, training, materiel, organization, and leadership in the U. S. Army. In support of the CTC information-gathering objective, the Army Research Institute at the Presidio of Monterey (ARI-POM) has developed and implemented a research program which includes the archiving and administration of CTC data from three of the four CTCs (BCTP not included), and the development of tools for training research and analysis.

The Combined Arms Center-Training (CAC-T) is the TRADOC coordinator for the development and implementation of CTC programs and dissemination of CTC Lessons Learned. CAC-T is the controlling agency of all CTC data and access to CTC data is coordinated through CAC-T. ARI receives unit performance data from the CTCs (Operations Group (OPS GRP) and the Training Analysis and Feedback (TAF) Division). ARI then interacts with the Center for Army Lessons Learned (CALL) to tailor databases to address Army issues. ARI conducts research to develop measures of CTC unit performance and effectiveness to support CALL in developing Lessons Learned and estimating training readiness.

INTRODUCTION

This catalog was developed to assist users of the ARI-CTC Archive by: (1) describing the various data sources, (2) identifying the contents or data elements, (3) listing availability, (4) requirements for use, and (5) locating and obtaining the data. The archive at ARI-POM has CTC data cataloged and shelved for the last three years only. For earlier data, only data sources on diskettes will be maintained. For a current status of the archive, refer to the ARI-CTC Archive Status Report.

NATIONAL TRAINING CENTER (NTC)

The mission of the NTC is to provide highly realistic and intensified combined arms and services training for CONUS-based battalion task forces and squadrons in a mid-to high-intensity combat environment. Since 1981, heavy brigades with or without light elements, go to the NTC to train for 14 days and nights on tactical missions with force-on-force Multiple Integrated Laser Engagement System (MILES) engagements against an opposing force (OPFOR) employing Warsaw Pact tactics. NTC training also includes live-fire exercises. The NTC schedules 12 rotations each year. On the average, a rotation consists of nine force-on-force and four live fire exercises for each of the two battalion task forces.

The ARI-POM archive contains Armor and Mechanized Infantry Task Force rotations beginning with NTC rotation 8605 and continues to the present. Limiting the archive thus to rotations beginning with 8605 contributes to the stability of the research data collection. Sufficient standardization, complete data collection, and rules of engagement were not well established until then. Hence, NTC data archived at ARI-POM are more representative of NTC operations from rotation 8605 forward.

COMBAT MANEUVER TRAINING CENTER (CMTC)

The mission of the CMTC is to provide realistic and intensified combined arms training in a mid to high intensity combat environment for 52 USAREUR maneuver battalion task forces. As at the NTC, heavy brigades go to the CMTC to train for 13 days and nights on tactical missions with force-on-force MILES engagements against an opposing force employing Warsaw Pact tactics.

The CMTC schedules approximately 12 rotations each year. The rotational period is divided into four phases. During the third phase, training engagement simulation exercises are conducted. Battalion-sized units conduct three missions each (e.g. Movement to Contact, Defense, and Deliberate Attack). Future development and implementation of an instrumentation system at CMTC, as at the NTC, will provide real-time position location, firing events, engagement data (kill/hit/near-miss), and terrain graphics.

INTRODUCTION

JOINT READINESS TRAINING CENTER (JRTC)

U. S. Army light forces have been training at the JRTC at Ft. Chaffee, Arkansas since the fall of 1987. The primary training unit at JRTC is the infantry battalion task force (TF). TFs train during an 11 day rotational period which is divided into 3-5 mission phases. During each phase, units conduct a series of tasks which comprise the mission for that phase (e.g., Conduct a Defense, Deliberate Attack, etc.). Missions vary slightly from rotation to rotation depending on the type of force training; however, the usual JRTC rotation consists of a deployment, a low-intensity offense, a defense, and two mid-intensity offensive missions.

The opposing force (OPFOR) replicates a Soviet surrogate reinforced airborne battalion during the deployment and low-intensity offensive missions, a motorized rifle battalion (+) during the defense, and a motorized rifle battalion or a Warsaw pact surrogate infantry battalion during the mid-intensity offensive missions.

JRTC training encompasses a variety of unit types and training scenarios. In contrast to the NTC and CMTC, where training essentially is focussed on heavy unit types and missions, JRTC training is provided to a variety of light force unit types to include: light infantry, air assault units, rangers, airborne units, special operations forces, as well as each units supporting elements. Low-intensity and mid-intensity conflict (LIC and MIC) scenarios may vary according to unit type.

The individual character of training units (and training scenarios) at JRTC and the data collection mechanisms and types of data available present some interesting challenges to the JRTC training analyst. TFs receive a formal After Action Review (AAR) for each mission phase. TF performance is assessed by JRTC Observer/Controllers (O/Cs) at all echelons from battalion to squad. Limited brigade participation, TF slice element and special team performance are assessed both as part of the overall TF performance and as individual elements. At least one formal AAR during the rotation is given on selected Battlefield Operating Systems (BOS) and slice elements — e.g., fire support (FS), combat support (CS) and combat service support (CSS), air defense artillery (ADA), mobility/counter-mobility/survivability (M/CM/S), aviation, intelligence. Subordinate echelons, most of the slice elements, and all special teams (e.g., mortar platoon) receive field AARs immediately following the close of each mission phase.

NTC ARCHIVE CATALOG

INSTRUMENTED DATA: NTC instrumented data consists of the Core Instrumentation Subsystem (CIS) log and conditionally the Range Data Measurement Subsystem (RDMS) log digital data sources. A variety of analytical software tools are available for utilizing NTC instrumented data. They are described as follows:

MISSION DATABASES

Description:
The NTC digital data are converted into what is referred to as the "Mission Database" which consists of a mission-level INGRES database containing 18 tables. This database contains the event-driven data captured during the engagement training exercise. Primary data elements are fire events (trigger pulls), pairing events (matched/unmatched), commo events (key depressed/ released), position/location with events (every five minutes), battlefield graphics (e.g., obstacles, minefields), and unit organization.

Contents/Data Elements:
Nineteen tables within the INGRES database:

1. Mission Identification Table (MID),
2. Player State Initialization Table (PSIT),
3. Player State Update Table (PSUT),
4. Unit State Initialization Table (USIT),
5. Unit State Update Table (USUT),
6. Unit Type Table (UTT),
7. Player/ Vehicle/ Weapon Code Table (PVWT),
8. Firing Event Table (FET),
9. Pairing Event Table (PET),
10. Communication Table (CT),
11. Ground Player Position Location Table (GPLT),
12. Air Player Position Location Table (APLT),
13. IFCAS Target Table (IFTT)
14. IFCAS Target Group Table (IFGT),
15. IFCAS Mission fired Table (IFMF),
16. IFCAS Casualties Table (IFCT),
17. Minefield Casualties Table (MCT),
18. Control Measure Table (CMT) (For rotations prior to 1989, the Control Measure Add Table (CMA) are contained in a separate table.)

Requirements:
Users require an account on the ARI-POM computer (VAX 11/780).

Availability:
Refer to Appendix A of the Users Guide to the ARI-NTC Mission Database for data elements within each of the 18 INGRES tables.

Location:
ARI Computer Center, Bldg 110 (terminals)

NTC ARCHIVE CATALOG

INSTRUMENTED DATA

SUN WORKSTATION

Description:

The Sun Replay Station enables analysts to playback the training exercise and display significant information about events and conditions as they occurred. Messages of key events can be displayed as they occur and provide summary statistics and graphic displays of the data.

Contents/Data Elements:

Graphics display depict:

-Player Position Location—UTM Coordinates (BLUEFOR & OPFOR)
-Fire Events & Player Engagement (kill/hit/near-miss)
-Battlefield Graphics (e.g., obstacles, minefields)
-Contours & Terrain Features
-Time Tags
-Player Identification (bumper number)
-Unit Affiliation
-Weapon Type

Requirement:

Sun Workstation with NTC software; NTC digital playback tapes.

Availability:

Data from FY 92 rotations and later.

Location:

ARI Computer Center, Bldg 110 (Sun Workstation)

CONTOUR AND PLAYER LOCATION PLOTS

Description:

This program is designed to generate a "snap-shot" of the friendly and enemy situation. A plot is produced which consists of elevation contours and player locations at the specified time during the battle. Such plots assist in determining *why's* of unit performance. The data are derived from the digital database and plots are developed on the VAX computer.

Contents/Data Elements:

Graphics display depict:

-Player Position Location—UTM Coordinates (BLUEFOR & OPFOR)
-Battlefield Graphics
-Contours
-Terrain Features
-Time Tags

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NTC ARCHIVE CATALOG

INSTRUMENTED DATA

CONTOUR AND PLAYER LOCATION PLOTS   (Cont.)

Requirement:
Users require an account on the ARI-POM computer (VAX 11/780).

Availability:
Data can be produced for any NTC-INGRES Mission Database.

Location:
ARI Computer Center, Bldg 110 (terminals)

GENERAL-PURPOSE NTC ANALYSIS OF TRAINING TOOL (GNATT II)

Description:
GNATT is one of three battle replay tools (i.e. GNATT, TBAT, and MPART) available via the CTC Analyst's Workstation environment.This software tool developed for analysis of NTC Training allows training exercise data (player movement and engagements on NTC terrain) to be viewed and analyzed on an IBM-compatible computer with a hard disk. The program is menu driven and uses data from the VAX computer INGRES Relational Database Mnagement System. Existing INGRES queries extract the data for a specified training exercise.

Contents/Data Elements:
1. Player Position Location—UTM Coordinates (time tagged) (BLUEFOR & OPFOR)
2. Player Engagement (kill, hit or near miss) (time tagged)
3. Player Status (alive or killed)
4. Unit Affiliation (color coded)
5. Player Identification (Bumper Number)
6. Weapon Type
7. Battlefield graphics (e.g., obstacles, minefields)

Requirements:
MS-DOS computer with hard disk and Extended Graphics Adapter (EGA).
Optionally, a printer using Epson FX Protocol is needed to print displays.

Availability:
Data can be produced for any NTC-INGRES Mission Database. Refer to The User's Guide to the CTC Analyst's Workstation. Also available offsite on PCs.

Location:
Combat Training Data Gateway (CTDG) (Bldg. 106)

NTC ARCHIVE CATALOG

INSTRUMENTED DATA

TASK FORCE BATTLE TRACE (TBAT)

Description:

This software tool is designed to give a snapshot of the flow of a battle by capturing all player movement during a mission in a single picture. This pattern of movement can be analyzed to determine the basic structure of maneuver and command and control functions. Like GNATT, this program is menu driven and uses data from the VAX computer INGRES Relational Database Management System.

Contents/Data Elements:
1. Player Position Location—UTM Coordinates (time tagged)
2. Terrain Features
3. BDA indicator (combat losses only)

Requirements:
MS-DOS computer with hard disk and Extended Graphics Adapter (EGA).
Optionally, a printer using Epson FX Protocol is needed to print displays.

Availability:
Data can be produced for any NTC-INGRES Mission Database. Refer to The User's Guide to the CTC Analyst's Workstation.

Location:
Combat Training Data Gateway (CTDG) (Bldg. 106)

MISSION PERFORMANCE ANALYSIS REPLAY TOOL (MPART)

Description:
This is the third replay tool available through the workstation. MPART is designed to graphically portray battles in a realtime event flow format. The program is almost identical to TBAT except that with MPART specific players may be selected at the beginning of the mission based on particular analysis requirements. The selected players are displayed using an appropriate symbol for each respective combat system (eg., tank, APC). Player kills cause the killed combat system to be removed from the screen. A METT-T template facilitates assessment of unit performance based on METT-T factors.

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NTC ARCHIVE CATALOG
INSTRUMENTED DATA

MISSION PERFORMANCE ANALYSIS REPLAY TOOL (MPART)   (Cont.)

Contents/Data Elements:
1. Player Position Location—UTM Coordinates (time tagged)
2. Battlefield Graphics (e.g., obstacles, minefields)
3. Terrain Features
4. BDA (combat losses only)
5. Player Identification (bumper number)
6. Weapon Type

Requirements:
MS-DOS computer with hard disk and Extended Graphics Adapter (EGA).
Optionally, a printer using Epson FX Protocol is needed to print displays.

Availability:
Data can be produced for any NTC-INGRES Mission Database.   Refer to The User's Guide
to the CTC Analyst's Workstation for instruction on using this tool.

Location:
Combat Training Data Gateway (CTDG) (Bldg 106)

BATTALION COMBAT OUTCOME MODEL (BCOM)

Description:
BCOM has two modes. The replay mode allows the user to replay NTC missions using actual
instrumented data, on actual NTC terrain, while displaying tactical symbology and engage-
ment vectors. The model mode allows the user to build opposing forces with varying
composition and weaponry and allow the model to "fight the battle."

Contents/Data Elements:
1. Player Position Location—UTM Coordinates (time tagged)
2. Player Engagement (kill/hit/near-miss) (time tagged)
3. Unit Affiliation
4. Battlefield Graphics
5. Terrain Features

Requirements:
Silicon Graphics Workstation

Availability:
Data can be produced for any NTC-INGRES Mission Database.   Refer to The User's Guide
to the CTC Analyst's Workstation.

Location:
Combat Training Data Gateway (CTDG) (Bldg. 106)

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NTC ARCHIVE CATALOG

TAKE HOME PACKAGE (THP)

Description:

This narrative feedback to units emphasizes a review of unit performance within the framework of the battlefield operating systems. The document is primarily narrative with some battle statistics.

Contents/Data Elements:

List of Missions Conducted

Section I - General Summary

Section II - Mission Statements (Commanders Intent)

Section III - Battlefield Operating System (BOS)/Lessons Learned

    - Tab (One Tab per BOS):

            A-G Annexes of Battlefield Operating Systems (BOS)

                1. Trends/Recommendations

                2. Live Fire

            H   NCO Support Channel

Section IV - Statistical Analysis

                1. TF Battle Losses

                2. Company/Team Battle Losses

                3. Weapon Systems Causing OPFOR Casualties

                4. Battle Loss Ratio

Annex 1 - Company/Team AAR

              - By Mission, by Battle Phase

              - Lessons Learned

THP organization and format reflects rotation 8711 onward. Earlier THP organization was by mission rather than by BOS; however, the content remains unchanged.

Availability:

Contained on paper and floppy disk (DOS format/ASCII Text files) (5 1/4")

Location & POC:

Bldg 105 (Archive). Check Out/In through Archivist.

NTC ARCHIVE CATALOG

COMMUNICATIONS (COMMO):

Description:
These 40 channel audio recordings contain selected unit radio communications during the course of the battle. The Commo tapes contain complex data and analysis is very labor intensive.

Contents/Data Elements:
40 Channel Capacity; (most Company level and above nets covered)

Availability:
Contained on 10.5" Reel Magnetic Tapes; CEOI on paper for most rotations.

Location & POC:
Tapes are in Bldg 105; 40 Channel Tape Recorder is located in Bldg 106.
Tapes are checked Out/In through Archivist.

AFTER ACTION REVIEW (AAR):

Description:
AARs are intended to provide constructive, comprehensive, standardized format for training feedback after each mission. The archive contains video recordings for brigade, task force, company/team, and platoon echelons. Also included are special AARs, e.g., FSB, FA, CSS, and Live Fire.

Contents/Data Elements:
1. Video Recording of TF Level AAR After Each Mission
2. Video Recording of Selected Company/Team Level AARs
3. Video Recording of Selected Platoon Level AARs
4. Video Recording for FSB, ENG, BDE, FA, CSS, AVN, TOC, & ADA AARs
5. Video Recording for IN, AR, & FA Live Fire
6. Video Recording of FINAL AAR for IN, AR, FA, FSB, & AVN

Availability:
Most tapes are 1-hour long; some 10-20 Min. (action summaries).
About 150-200 tapes/rotation.
All Tapes are 3/4 inch U-Matic format.

Location & POC:
Bldg 105 (Archive); Check Out/In through Archivist.

NTC ARCHIVE CATALOG

INITIALIZATION FILE

Description:

This document contains various bits of information on instrumented unit and player listings; it is primarily used by database managers to correspond RDMS data with CIS data. The analyst can use data contained in these listings to derive initial strength values.

Contents/Data Elements:

Unit Listing:
Force
Unit name & description
Line/Task Organization

Player Listing:
Force & Description
Player Identification (bumper number)
B-Unit Identification
Logical Player Number (LPN)
Task Organization
Calculation of Center of Mass

Availability:

Contained on paper. (Available for most rotations)

Location & POC:

Bldg 105 (Archive); Check Out/In through Archivist.

OPERATIONS ORDER (OPORD)

Description:

These documents describe the scenarios developed for unit training at the NTC.

Contents/Data Elements:

1. Commander's Concept of the Mission
2. Operations Order
3. Graphic Overlays
4. Annexes

Availability:

Contained on paper, acetate (overlays), and on disk (written portion only) ; available as provided by the unit.

Location & POC:

Bldg 105 (Archive).
Check Out/In through Archivist.

NTC ARCHIVE CATALOG

DAILY STAFF JOURNALS

Description:

This NTC data source provides a log of sequential activities, noted by time and event; it is usually kept by an operator for each unit. Information is primarily used as a quick-update reference.

Contents/Data Elements:

Reports:
- Commanders Sit Rep
- Intelligence
- Recon
- Logistics (FSB)
- Airspace Coordination
- NBC
- Air Request
- Div Frag Order
- Warning Order
- Tactical/Special Events

Availability:

Contained on paper in binders, when provided by the unit.

Location & POC:

Bldg 105 (Archive).
Check Out/In through Archivist.

COMBINED ARMS ASSESSMENT TEAM REPORTS (CAAT)

Description:

Contains summary reports of Subject Matter Expert (SME) observations during NTC Focussed Rotations.

Contents/Data Elements:

Obervations and recommendations—organized by:
1. Operating System
2. DTOML Area (Doctrine, Training, Organization, Materiel, Leadership)
3. Echelon

Executive Summary:
1. Objectives
2. Findings

Availability:

Contained on paper.

Location & POC:

Bldg 105 (Archive). Check Out/In through Archivist.

NTC ARCHIVE CATALOG

CENTER FOR ARMY LESSONS LEARNED (CALL) POST ROTATION INTERVIEWS (PRI)

Description:
PRI serve as a valuable source of data collected by personnel from CALL NTC Observation Division (LAD-ATC). This data provides a unit perspective of NTC training performance.

Contents/Data Elements:
Schedule of interviews
Observations and Assessments Form
Post-Rotation Interview Transcript

Availability:
Contained on paper.

Location & POC:
Bldg 105 (Archive).
Check Out/In through Archivist.

NTC OBSERVATION DIVISION (NOD) REPORT

Description:
The NOD produces reports on a variety of issues based on various types of NTC data (battle damage assessment, interviews, etc.). These reports provide insights and recommendations on special issues and concerns.

Contents/Data Elements:
NOD Report:
Observation
Discussion
Recommendation

Availability:
Contained on paper.

Location & POC:
Bldg 105 (Archive).
Check Out/In through Archivist.

NTC RULES OF ENGAGEMENT (ROE)

Description:

This document establishes the basic guidelines for the conduct of ESX and LFX training at the NTC. The ROE apply to all personnel participating in, supporting, observing or controlling rotational unit training at the NTC. The ROE change from time to time and are important for interpreting results.

Contents/Data Elements:

Introduction
Rules discussing:
Engagement Simulation (ESX)
Live Fire Exercise

Availability:

Contained on paper (in binder).

Location & POC:

Bldg 105 (Archive).
Check Out/In through Archivist.

CMTC ARCHIVE CATALOG

AFTER ACTION REVIEW (AAR)

Description:
These video recordings represent CMTC feedback given at the Brigade and Task Force echelons. Also included are special AARs, i.e. FSB, FA, and CSS. AARs are intended to provide a constructive, comprehensive, and standardized format for training feedback after each mission.

Contents/Data Elements:
1. Video Recording of TF Level AAR After Each Mission
2. Video Recording for FSB, CSS, MANEUVER, & FA AARs
3. Video Recording of FINAL AAR for IN & AR

Availability:
VHS Tapes; 1-2 tapes per mission.
AAR Slides (paper) are within the THP and are also available separately.

Location & POC:
Bldg 105 (Archive). Check Out/In through Archivist.

TAKE HOME PACKAGE (THP)

Description:
This feedback to units emphasizes a review of unit performance within the framework of the battlefield operating systems. The document is primarily narrative with some battle statistics.

Contents/Data Elements:
Section I	- Mission Summaries
	BOS Assessments
	ARTEP Subtask & Standard Statements
	Strengths & Weaknesses
Section II	- Mission AAR Sheets
	O/C Observation
	Systems Comments/Recommendations (by BOS)
Section III	- AAR Slides
Section IV	- Internal Assessment
	ARTEP Assessments
	Go/NoGo
Section V	- OPORD

Commander's Intent   Graphic Overlays
Operations Order   Annexes

Availability:
Contained on paper/in binders.

Location & POC:
Bldg 105 (Archive). Check Out/In through Archivist.

CMTC ARCHIVE CATALOG

OPERATIONS ORDER (OPORD)

Description:

These documents describe the scenarios developed for unit training at the CMTC. Some OPORDS are contained within the THPs; other OPORDS and OPLANS are cataloged separately. Contents are described under THP.

Commander's Intent	Graphic Overlays
Operations Order	Annexes

Availability:

Contained on paper in binders.

Location & POC:

Bldg 105 (Archive). Check Out/In through Archivist.

COMMUNICATIONS (COMMO)

Description:

These audio recordings represent selected unit radio communications during the course of the battle. The Commo tapes contain complex data and analysis is labor intensive.

Contents/Data Elements:

40 Channel Capacity

Availability:

Contained on 10.5" Reel Magnetic Tapes.

Location & POC:

Tapes are in Bldg 105 (Archive); 40 Channel Tape Recorder is located in Bldg 106. Tapes are checked Out/In through Archivist.

JRTC ARCHIVE CATALOG

TRAINING & EVALUATION OUTLINE (T&EO) CHECKLIST DATA FILES

Description:

The majority of data generated by O/Cs are collected on the JRTC battlefield through use of T&EO-based O/C checklists. The O/C checklists used at JRTC are comprised of a set of T&EO tasks (in checklist format) which delineate the particular mission phase being conducted (e.g., defense). They are filled out by the O/Cs at the close of each training exercise and forwarded to Data Management where they are entered into the automated data base system. T&EO tasks are derived totally from Army doctrine to include:

- o FM 25-100 "Training the Force" (1988);
- o FM 7-72 "Light Infantry Battalion" (1986);
- o FM 7-71 "Light Infantry Company" (1987);
- o FM 7-70 "Light Infantry Platoon/Squad" (1986);
- o ARTEP 7-8-MTP "Mission Training Plans (MTP) for the Infantry Rifle Platoon and Squad" (1988); and
- o TRADOC Regulation 310-2 "Design, Development, Preparation, and Management of ARTEP Documents (Mission Training Plans and Drill Books)" (1986).

T&EOs have been developed for all Battlefield Operating Systems (BOS) by echelon as well as for the various other elements which participate in JRTC training (e.g., U. S. Air Force Close Air Support (CAS), Army aviation). Currently, there are approximately 400 T&EOs in use at JRTC.

Contents/Data Elements:

Listed are the types of data available in the T&EO checklist data files to include variable names and descriptions of the type of information represented by each category of variable.

File Contents	Variable Name	Data Description
O/C Checklist Assessments	LISTID	Checklist identification code
	ROTID (a)	Rotation identification code
	UNITID (a)	Unit identification code
	SLICEID	Slice identification code
	ELEMENT (a)	Echelon identification code
	PHASE (a)	Phase/mission
	AARDATE (a)	Date of AAR for the phase
	DATEMOD	Date of last modification of associated T&EO task
	OPSYS	Operating system associated with task
	TASK	T&EO task number
	SUBTASK	Associated subtask number
	TASKN	Total number of subtasks associated with task
	SUBSCORE	GO/NO GO assessment assigned to subtask
	STS1 to STS45	GO/NO GO assessment assigned to associated Subtask standards

(a): Keyword variables that are common across T&EO, BDA, and fire data files.

T&EO CHECKLIST DATA FILES (Cont.)

Availability:
Contained on paper and disk (ASCII Portable File Format for SPSS—a statistical software package).
Utilized on PC or main frame (VAX 11-780).

Location & POC:
Bldg 105 (Archive).
Check Out/In through Archivist.

T&EO DATA FILE DOCUMENTATION

Description:
Documentation for T&EO data is used in conjunction with the T&EO data files. This document identifies the file format, variable names (data elements), and value labels.

Contents/Data Elements:

1. User Instructions	4. Length	7. Subtask Standards (STS)	10. Critical Leader Task
2. Task	5. Label	8. Critical Task	
3. Variable Name	6. Subtask	9. Leader Task	

Availability:
Contained on paper and on floppy disk (ASCII).

Location & POC:
Bldg 105 (Archive).
Check Out/In through Archivist.

BATTLE DAMAGE ASSESSMENTS (BDA)

Description:
In addition to O/C checklist data, O/Cs collect battle damage assessments for unit personnel and equipment.

Contents/Data Elements:

File Contents	Variable Name	Data Description
BDA	ROTID (a)	Rotation identification code
(personnel)	UNITID (a)	Unit identification code
	FORCE (a)	Type of force (OPFOR/BLUFOR)
	PHASE (a)	Mission phase
	ELEMENT (a)	Echelon identification code

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BATTLE DAMAGE ASSESSMENTS (BDA) (Cont.)

	AARDATE (a)	Date of AAR for the phase
	PSTART	Personnel available at start
	KIA	No. personnel killed in action
	WIA	No. personnel wounded in action
	DOW	No. personnel died of wounds
	CAP	No. personnel captured
	PCTKIA	Percent personnel KIA
	PCTWIA	Percent personnel WIA
	TOTCAS	Total percent casualties
BDA	ROTID (a)	Rotation identification code
(equipment)	UNITID (a)	Unit identification code
	FORCE (a)	Type of force (OPFOR/BLUFOR)
	PHASE (a)	Mission phase
	ELEMENT (a)	Echelon identification code
	AARDATE (a)	Date of AAR for the phase
	WEAPON	Weapon identification code
	START	Number weapons started
	DAMAGED	Number damaged
	DESTROY	Number destroyed
	PCTLOST	Percent equipment lost

Availability:
Contained on paper and disk (ASCII Portable File Format for SPSS).
Utilized on PC or main frame (VAX 11-780).

Location & POC:
Bldg 105 (Archive).
Check Out/In through Archivist.

FIRING DATA

Description:
Firing data are collected by weapon system for each mission. Data are collected for all weapon systems employed during each mission phase.

Contents/Data Elements:

File Contents	Variable Name	Data Description
Firing data	ROTID (a)	Rotation identification code
	UNITID (a)	Unit identification code
	FORCE (a)	Type of force (OPFOR/BLUFOR)
	PHASE (a)	Mission phase
	AARDATE (a)	Date of AAR for the phase
	WPNSYS	Weapon system firing mission

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FIRING DATA (Cont.)

Contents/Data Elements:

File Contents	Variable Name	Data Description
	MISSIONS	No. of missions fired
	EFFECT	No. effective missions
	KIA	No. personnel KIA
	WIA	No. personnel WIA
	START	No. rounds available at start
	EXPEND	No. rounds expended
	FRAT	No. of fratricides
	VKILL	No. vehicles killed
	TKILL	No. tanks killed
	CAS	Total casualties

(a): Keyword variables that are common across T&EO, BDA, and fire data files.

Availability:
Contained on paper and disk (ASCII Portable File Format for SPSS).
Utilized on PC or main frame (VAX 11-780).

Location & POC:
Bldg 105 (Archive). Check Out/In through Archivist.

INSTRUMENTED DATA

I-MILES DATA

Description:
As the only source of instrumented data for crew-served weapons (i.e. Dragon, TOW, etc.), the primary I-MILES data elements are: fire events (trigger pulls), pairing events (matched/unmatched), time, and unit organization. I-MILES data are generated and stored in dBase III ASCII format and used with customized software developed by the Testing & Experimentation Command (TEXCOM). This data is also contained in the data documentation booklet.

Contents/Data Elements:
1. Unit
2. Time
3. Firing Event
4. Pairing Event (Near-miss, hit, kill, fratricide)
5. Weapon System
6. Player/Vehicle/Weapon Code

Availability:
Contained on floppy disk (DBASE III; must be used with Loral Software).

Location & POC:
Bldg 105 (Archive). Check Out/In through Archivist.

JRTC ARCHIVE CATALOG

TAKE HOME PACKAGE (THP)

Description:

An O/C-generated archive of unit training is provided to each task force at the close of the rotation (the JRTC Take Home Package). THPs contain a broad spectrum of information about each units performance to include written descriptions of mission execution, O/C assessments of unit performance against T&EO standards, and various supporting BDA statistics.

Contents/Data Elements:

Data Type	Data Description
BDE TF Trends	- Lists critical tasks and assessements for each BOS - Narrative discussion of unit strengths and areas needing improvement
CS and CSS Trends	- Narrative discussion of strengths and weaknesses for CS and CSS slice elements (includes home station training recommendations)
Aviation Trends	- Critical tasks for aviation element - Narrative discussion of strengths and weaknesses for individual aviation elements (includes home station training recommendations)
Fire Support Trends	- Critical tasks and narrative discussion of unit strengths and weaknesses (includes home station training recommendations)
Spec Oper Forces Overview	- Performance overview of the integration of Spec Oper Forces with TF - Narrative discussion of strengths and weaknesses and home station training recommendations.
BN TF Msn Summaries	- Mission standards with GO/NG assessments for each mission phase - Narrative summary of mission execution for each mission - System summary for mission phase for each BOS - Personnel and Equipment BDA for each mission
TF Trends	- System critical tasks for each BOS - Narrative discussion of unit strengths and areas needing improvement
CO, BTRY, and PLT Trends	- Critical tasks for companies, batteries, and special platoons - Narrative discussion of strengths and weaknesses for companies, batteries, and special platoons
AAR Video List	- Complete list of AAR video tapes

Availability:

Contained on paper and on floppy disk (ASCII).

Location & POC:

Bldg 105 (Archive).
Check Out/In through Archivist.

AFTER ACTION REVIEWS (AAR)

Description:
These video recordings represent JRTC feedback given at the Task Force, company/team, and platoon echelons. Also included are special AARs, i.e. CSS, FA, and AVN. AARs are intended to provide constructive, comprehensive, standardized format for training feedback after each phase.

Contents/Data Elements:
1. Video Recording of TF Level AAR After Each Phase
2. Video Recording of Company/Team Level AARs
3. Video Recording of Platoon Level AA
4. Video Recording for CSS, ENG, AVN, FA, INTEL, MORTAR, BN AID, AIR ASSAULT, PSYOPS, and ANTI-TANK AARs
5. Video Recording of FINAL AAR for BN

Availability:
Available on 1/2" wide VHS tapes and 3/4" Umatic tapes (before 92-04), usually 2 hours long. AAR Slides on paper.

Location & POC:
Bldg 105 (Archive). Check Out/In through Archivist.

OPERATIONS ORDERS (OPORDS)

Description:
These documents describe the scenarios developed for unit training at the JRTC.

Contents/Data Elements:
1. Adjacent Unit Orders
2. Air Tasking Orders/Airlift Mission Schedules
3. BN, BDE, or DIV Fragmentary Orders/Plans With Overlays
4. BN, BDE, or DIV Operations Orders/Plans With Overlays
5. Joint Task Force Operations Plan

Availability:
Contained on paper.

Location & POC:
Bldg 105 (Archive).
Check Out/In through Archivist.

JRTC ARCHIVE CATALOG

UNIT STANDING OPERATING PROCEDURE (SOP)

Description:
This document describes the combat operations of an organization and its subordinate units. Administrative, logistical, and training procedures used for combat processes (plan, prepare, coordinate, execute, and command and control) are identified.

Contents/Data Elements:
Battalion Operations
Admin/Log
Training

Availability:
Contained on paper.
Not received consistently for each rotation.

Location & POC:
Contained on paper; Bldg 105 (Archive).
Check Out/In through Archivist.

JRTC TACTICAL RULES OF ENGAGEMENT (ROE)

Description:
This document establishes the basic guidelines for the conduct of Engagement Simulation Exercise (ESX) training at the JRTC. The ROE apply to all personnel participating in, supporting, observing or controlling rotational unit training at the JRTC.

Contents/Data Elements:
Introduction
Rules discussing:
- Engagement Simulation Exercise (ESX)
- Live Fire Exercise (LFX)

Availability:
Contained on paper (in binder).

Location & POC:
Bldg 105 (Archive).
Check Out/In through Archivist.

FUTURE DEVELOPMENTS

The CTCs undergo periodic change in the types of data collected, the forms in which data are represented (data sources), as well as training operations (Rules of Engagement (ROE)). The data sources contained in the CTC Archive, as described in this catalog, reflect the current nature and forms of data represented at the CTCs.

In addition, ARI is developing additional research and analysis (software) tools, and is, as well, digitizing much CTC data which are now in other forms. This effort will be represented via the Combat Operations Research Facility (CORF) located at ARI-POM, and future installations at CALL, the CTCs, TRADOC schools and integrating centers as well as other proponents. The Intelligent Gateway Processor (IGP) is a network system that will establish and support CORF access to the ARI-CTC Archive as well as other relevant data bases from homestation.

The development of research and analysis tools, digitization, of CTC data, and remote electronic access of linked data bases, will provide users with inhanced efficiency and effectiveness in using CTC data.